

69°, 291° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.			
Dec.	Hc	d	Z	Dec.																								
0	18 04.8 +31.5	100.9		17 53.4 +32.3	101.2		17 41.6 +33.2	101.5		17 29.4 +34.2	101.8		17 17.0 +35.0	102.1		17 04.3 +35.9	102.4		16 51.2 +36.8	102.7		16 37.9 +37.5	103.0		0			
1	18 36.3 +31.2	100.0		18 25.7 +32.1	100.3		18 14.8 +33.0	100.6		18 03.6 +33.9	100.9		17 52.0 +34.8	101.3		17 40.2 +35.6	101.6		17 28.0 +36.5	101.9		17 15.4 +37.4	102.2		1			
2	19 07.5 +30.9	99.1		18 57.8 +31.9	99.4		18 47.8 +32.8	99.7		18 37.5 +33.7	100.1		18 26.8 +34.6	100.4		18 15.8 +35.5	100.7		18 04.5 +36.3	101.1		17 52.8 +37.2	101.4		2			
3	19 38.4 +30.6	98.2		19 29.7 +31.5	98.5		19 20.6 +32.5	98.9		19 11.2 +33.4	99.2		19 01.4 +34.4	99.5		18 51.3 +35.2	99.9		18 40.8 +36.1	100.2		18 30.0 +37.0	100.5		3			
4	20 09.0 +30.3	97.2		20 01.2 +31.3	97.6		19 53.1 +32.3	98.0		19 44.6 +33.2	98.3		19 35.8 +34.0	98.7		19 26.5 +35.0	99.0		19 16.9 +35.9	99.4		19 07.0 +36.7	99.7		4			
5	20 39.3 +30.1	96.3		20 32.5 +31.1	96.7		20 25.4 +31.9	97.1		20 17.8 +32.9	97.4		20 09.8 +33.9	97.8		20 01.5 +34.7	98.2		19 52.8 +35.6	98.5		19 43.7 +36.5	98.9		5			
6	21 09.4 +29.8	95.4		21 03.6 +30.7	95.8		20 57.3 +31.7	96.2		20 50.7 +32.6	96.5		20 43.7 +33.5	96.9		20 36.2 +34.5	97.3		20 28.4 +35.4	97.7		20 20.2 +36.3	98.0		6			
7	21 39.2 +29.4	94.5		21 34.3 +30.4	94.9		21 29.0 +31.4	95.2		21 23.3 +32.3	95.6		21 17.2 +33.3	96.0		21 10.7 +34.2	96.4		21 03.8 +35.1	96.8		20 56.5 +36.0	97.2		7			
8	22 08.6 +29.1	93.5		22 04.7 +30.1	93.9		22 00.4 +31.0	94.3		21 55.6 +32.1	94.7		21 50.5 +32.9	95.1		21 44.9 +33.9	95.5		21 38.9 +34.8	95.9		21 32.5 +35.7	96.3		8			
9	22 37.7 +28.8	92.6		22 34.8 +29.8	93.0		22 31.4 +30.8	93.4		22 27.7 +31.7	93.8		22 23.4 +32.7	94.2		22 18.8 +33.6	94.6		22 13.7 +34.6	95.1		22 08.2 +35.5	95.5		9			
10	23 06.5 +28.4	91.6		23 04.6 +29.4	92.1		23 02.2 +30.4	92.5		22 59.4 +31.4	92.9		22 56.1 +32.4	93.3		22 52.4 +33.3	93.7		22 48.3 +34.2	94.2		22 43.7 +35.2	94.6		10			
11	23 34.9 +28.1	90.7		23 34.0 +29.1	91.1		23 32.6 +30.1	91.5		23 30.8 +31.0	92.0		23 28.5 +32.0	92.4		23 25.7 +33.0	92.8		23 22.5 +34.0	93.3		23 18.9 +34.9	93.7		11			
12	24 03.0 +27.7	89.7		24 03.1 +28.7	90.1		24 02.7 +29.7	90.6		24 01.8 +30.7	91.0		24 00.5 +31.7	91.5		23 58.7 +32.7	91.9		23 56.5 +33.6	92.4		23 53.8 +34.5	92.8		12			
13	24 30.7 +27.3	88.7		24 31.8 +28.3	89.2		24 32.4 +29.4	89.6		24 32.5 +30.4	90.1		24 32.2 +31.4	90.6		24 31.4 +32.3	91.0		24 30.1 +33.3	91.5		24 28.3 +34.3	91.9		13			
14	24 58.0 +27.0	87.7		25 00.1 +28.0	88.2		25 01.8 +29.0	88.7		25 02.9 +30.0	89.1		25 03.6 +31.0	89.6		25 03.7 +32.0	90.1		25 03.4 +32.9	90.5		25 02.6 +33.9	91.0		14			
15	25 25.0 +26.5	86.8		25 28.1 +26.6	87.2		25 30.8 +28.6	87.7		25 32.9 +29.6	88.2		25 34.6 +30.6	88.7		25 35.7 +31.6	89.1		25 36.3 +32.7	89.6		25 36.5 +33.6	90.1		15			
16	25 51.5 +26.2	85.8		25 55.7 +27.2	86.2		25 59.4 +28.2	86.7		26 02.5 +29.3	87.2		26 05.2 +30.2	87.7		26 07.3 +31.3	88.2		26 09.0 +32.2	88.7		26 10.1 +33.2	89.2		16			
17	26 17.7 +25.7	84.8		26 22.9 +26.7	85.3		26 27.6 +27.8	85.8		26 31.8 +28.8	86.2		26 35.4 +29.9	86.7		26 38.6 +30.8	87.2		26 41.2 +31.9	87.7		26 43.3 +32.8	88.3		17			
18	26 43.4 +25.3	83.8		26 49.6 +26.4	84.3		26 55.4 +27.4	84.8		27 00.6 +28.4	85.3		27 05.3 +29.4	85.8		27 09.4 +30.5	86.3		27 13.1 +31.4	86.8		27 16.1 +32.5	87.3		18			
19	27 08.7 +24.8	82.7		27 16.0 +25.9	83.2		27 22.8 +26.9	83.8		27 29.0 +28.0	84.3		27 34.7 +29.1	84.8		27 39.9 +30.1	85.3		27 44.5 +31.1	85.8		27 48.6 +32.1	86.4		19			
20	27 33.5 +24.4	81.7		27 41.9 +25.4	82.2		27 49.7 +26.5	82.8		27 57.0 +27.6	83.3		28 03.8 +28.6	83.8		28 10.0 +29.6	84.3		28 15.6 +30.7	84.9		28 20.7 +31.7	85.4		20			
21	27 57.9 +23.9	80.7		28 07.3 +25.0	81.2		28 16.2 +26.1	81.7		28 24.6 +27.1	82.3		28 32.4 +28.1	82.8		28 39.6 +29.2	83.3		28 46.3 +30.2	83.9		28 52.4 +31.2	84.4		21			
22	28 21.8 +23.4	79.6		28 32.3 +24.5	80.2		28 42.3 +25.6	80.7		28 51.7 +26.6	81.3		29 00.5 +27.7	81.8		29 08.8 +28.8	82.3		29 16.5 +29.8	82.9		29 23.6 +30.9	83.5		22			
23	28 45.2 +23.0	78.6		28 56.8 +24.1	79.1		29 07.9 +25.1	79.7		29 18.3 +26.2	80.2		29 28.2 +27.3	80.8		29 37.6 +28.3	81.3		29 46.3 +29.3	81.9		29 54.5 +30.3	82.5		23			
24	29 08.2 +22.4	77.5		29 20.9 +23.5	78.1		29 33.0 +24.6	78.6		29 44.5 +25.7	79.2		29 55.5 +26.7	79.8		30 05.9 +27.8	80.3		30 15.6 +28.9	80.9		30 24.8 +29.9	81.5		24			
25	29 30.6 +22.0	76.5		29 44.4 +23.0	77.0		29 57.6 +24.1	77.6		30 10.2 +25.2	78.1		30 22.2 +26.3	78.7		30 33.7 +27.3	79.3		30 44.5 +28.4	79.9		30 54.7 +29.5	80.5		25			
26	29 52.6 +21.4	75.4		30 07.4 +22.5	76.0		30 21.7 +23.6	76.5		30 35.4 +24.7	77.1		30 48.5 +25.8	77.7		31 01.0 +26.8	78.3		31 12.9 +27.9	78.9		31 24.2 +29.0	79.5		26			
27	30 14.0 +20.9	74.3		30 29.9 +22.0	74.9		30 45.3 +23.1	75.5		31 00.1 +24.1	76.0		31 14.3 +25.2	76.6		31 27.8 +26.3	77.2		31 40.8 +27.4	77.8		31 53.2 +28.4	78.4		27			
28	30 34.9 +20.3	73.2		30 51.9 +21.4	73.8		31 08.4 +22.5	74.4		31 24.2 +23.6	75.0		31 39.5 +24.7	75.6		31 54.1 +25.8	76.2		32 08.2 +26.9	76.8		32 21.6 +27.9	77.4		28			
29	30 55.2 +19.8	72.1		31 13.3 +20.9	72.7		31 30.9 +22.0	73.3		31 47.8 +23.1	73.9		32 04.2 +24.1	74.5		32 19.9 +25.3	75.1		32 35.1 +26.3	75.7		32 49.5 +27.5	76.3		29			
30	31 15.0 +19.2	71.0		31 34.2 +20.3	71.6		31 52.9 +21.4	72.2		32 10.9 +22.5	72.8		32 28.3 +23.6	73.4		32 45.2 +24.7	74.0		33 01.4 +25.8	74.6		33 17.0 +26.8	75.3		30			
31	31 34.2 +18.7	69.9		31 54.5 +19.8	70.5		32 14.3 +20.8	71.1		32 33.4 +21.9	71.7		32 51.9 +23.1	72.3		33 09.9 +24.1	72.9		33 27.2 +25.2	73.6		33 43.8 +26.3	74.2		31			
32	31 52.9 +18.0	68.8		32 14.3 +19.1	69.4		32 35.1 +20.2	70.0		32 55.3 +21.4	70.6		33 15.0 +22.4	71.2		33 34.0 +23.5	71.8		33 52.4 +24.6	72.5		34 10.1 +25.7	73.1		32			
33	32 10.9 +17.4	67.7		32 33.4 +18.5	68.3		32 55.3 +19.7	68.9		33 16.7 +20.7	69.5		33 37.4 +21.8	70.1		33 57.5 +22.9	70.7		34 17.0 +24.0	71.4		34 35.8 +25.2	72.0		33			
34	32 28.3 +16.9	66.6		34 19.0 +17.3	67.1		34 33.0 +18.4	67.7		34 57.5 +19.5	68.2		34 20.4 +20.6	68.6		34 47.5 +21.7	69.2		35 04.4 +22.8	69.8		35 25.5 +23.9	70.8		34			
35	34 45.2 +16.2	65.4		35 24.7 +16.0	64.9		35 14.5 +16.4	64.6		35 44.6 +15.4	65.0		36 02.2 +16.5	65.9		36 43.0 +17.6	66.1		35 04.4 +21.1	67.3		35 27.2 +22.2	68.0		35 49.4 +23.2	68.7		35
36	34 25.0 +11.6	65.2		34 53.2 +16.0	59.8		34 10.1 +17.1	64.3		34 35.8 +18.2	64.9		35 01.0 +19.3	65.6		35 25.5 +20.4	66.2		35 49.4 +21.5	66.9		36 12.6 +22.6	67.5		37			
37	34 33.0 +14.9	63.1		34 43.8 +16.0	63.7		34 10.1 +17.1	64.3		34 35.8 +18.2	64.9		35 01															

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 69° , 291°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	18 04.8 -31.6	100.9	17 53.4 -32.6	101.2	17 41.6 -33.5	101.5	17 29.4 -34.3	101.8	17 17.0 -35.2	102.1	17 04.3 -36.1	102.4	16 51.2 -36.9	102.7	16 37.9 -37.8	103.0	16 00.1 -38.0	103.8	16 22.1 -38.1	104.6	15 37.1 -37.3	104.4	15 22.1 -38.3	105.4	0
1	17 33.2 -32.0	101.8	17 20.8 -32.8	102.1	17 08.1 -33.7	102.4	16 55.1 -34.6	102.7	16 41.8 -35.5	103.0	16 28.2 -36.3	103.3	16 14.3 -37.2	103.5	16 00.1 -38.0	103.8	16 22.1 -38.1	104.6	15 37.1 -37.3	104.4	15 22.1 -38.3	105.4	15 22.1 -38.3	105.4	1
2	17 01.2 -32.1	102.6	16 48.0 -33.1	102.9	16 34.4 -34.0	103.2	16 20.5 -34.8	103.5	16 06.3 -35.6	103.8	15 51.9 -36.5	104.1	15 37.1 -36.7	104.4	15 22.1 -37.3	104.4	15 22.1 -38.1	104.6	15 37.1 -37.3	104.4	15 22.1 -38.3	105.4	15 22.1 -38.3	105.4	2
3	16 29.1 -32.4	103.5	16 14.9 -33.2	103.8	16 00.4 -34.1	104.1	15 45.7 -35.0	104.4	15 30.7 -35.9	104.6	15 15.4 -36.7	104.9	14 59.8 -37.5	105.2	14 22.3 -37.6	106.0	14 05.7 -38.5	106.2	14 22.3 -37.6	106.0	14 05.7 -38.5	106.2	14 05.7 -38.5	106.2	4
4	15 56.7 -32.6	104.4	15 41.7 -33.5	104.7	15 26.3 -34.3	104.9	15 10.7 -35.2	105.2	14 54.8 -36.0	105.5	14 38.7 -36.8	105.7	14 22.3 -37.6	106.0	14 05.7 -38.5	106.2	14 22.3 -37.6	106.0	14 05.7 -38.5	106.2	14 05.7 -38.5	106.2	4		
5	15 24.1 -32.7	105.3	15 08.2 -33.6	105.5	14 52.0 -34.5	105.8	14 35.5 -35.3	106.0	14 18.8 -36.2	106.3	14 01.9 -37.0	106.5	13 44.7 -37.6	106.8	13 27.2 -38.6	107.0	13 09.9 -38.8	107.2	13 24.6 -38.6	107.4	13 09.9 -38.8	107.2	13 09.9 -38.8	107.2	5
6	14 51.4 -33.0	106.1	14 34.6 -33.9	106.4	14 17.5 -34.7	106.6	14 00.2 -35.5	106.9	13 42.6 -36.3	107.1	13 24.9 -37.2	107.3	13 06.9 -38.0	107.6	12 48.6 -38.7	107.8	12 09.9 -38.9	108.6	12 54.4 -39.4	112.4	12 54.4 -39.4	112.4	6		
7	14 18.4 -33.2	107.0	14 00.7 -34.0	107.2	13 42.8 -34.8	107.5	13 24.7 -35.7	107.7	13 06.3 -36.5	107.9	12 47.7 -37.3	108.2	12 28.9 -38.1	108.4	12 09.9 -38.9	108.6	12 54.4 -39.4	112.4	12 54.4 -39.4	112.4	12 54.4 -39.4	112.4	7		
8	13 45.2 -33.3	107.9	13 26.7 -34.2	108.1	13 08.0 -35.1	108.3	12 49.0 -35.8	108.5	12 29.8 -36.6	108.8	12 10.4 -37.4	109.0	11 50.8 -38.2	109.2	11 31.0 -39.0	109.4	11 54.4 -39.4	112.4	11 54.4 -39.4	112.4	11 54.4 -39.4	112.4	8		
9	13 11.9 -33.5	108.7	12 52.5 -34.3	108.9	12 32.9 -35.1	109.2	12 13.2 -36.0	109.4	11 53.2 -36.8	109.6	11 33.0 -37.6	109.8	11 12.6 -38.3	109.9	10 52.0 -39.1	110.1	10 52.0 -39.1	110.1	10 52.0 -39.1	110.1	10 52.0 -39.1	110.1	9		
10	12 38.4 -33.7	109.6	12 18.2 -34.5	109.8	11 57.8 -35.3	110.0	11 37.2 -36.2	110.2	11 16.4 -36.9	110.4	10 55.4 -37.7	110.6	10 34.3 -38.5	110.7	10 12.9 -39.2	110.9	10 12.9 -39.2	110.9	10 12.9 -39.2	110.9	10 12.9 -39.2	110.9	10		
11	12 04.7 -33.8	110.4	11 43.7 -34.7	110.6	11 22.5 -35.5	110.8	11 01.0 -36.2	111.0	10 39.5 -37.1	111.2	10 17.7 -37.8	111.3	9 55.8 -38.6	111.5	9 33.7 -39.3	111.7	9 33.7 -39.3	111.7	9 33.7 -39.3	111.7	9 33.7 -39.3	111.7	11		
12	11 30.9 -34.0	111.3	11 09.0 -34.8	111.4	10 47.0 -35.6	111.6	10 24.8 -36.4	111.8	10 02.4 -37.1	112.0	9 39.9 -37.9	112.1	9 17.2 -38.6	112.3	8 54.4 -39.4	112.4	8 54.4 -39.4	112.4	8 54.4 -39.4	112.4	8 54.4 -39.4	112.4	12		
13	10 56.9 -34.1	112.1	10 34.2 -34.9	112.3	10 11.4 -35.7	112.4	9 48.4 -36.5	112.6	9 25.3 -37.3	112.8	9 02.0 -38.0	112.9	8 38.6 -38.8	113.1	8 15.0 -39.5	113.2	8 15.0 -39.5	113.2	8 15.0 -39.5	113.2	8 15.0 -39.5	113.2	13		
14	10 22.8 -34.2	112.9	9 59.3 -35.0	113.1	9 35.7 -35.8	113.3	9 11.9 -36.5	113.4	8 48.0 -37.3	113.6	8 24.0 -38.1	113.7	7 59.8 -38.8	113.8	7 35.5 -39.6	114.0	7 35.5 -39.6	114.0	7 35.5 -39.6	114.0	7 35.5 -39.6	114.0	14		
15	9 48.6 -34.4	113.8	9 24.3 -35.1	113.9	8 59.9 -35.9	114.1	8 35.4 -36.7	114.2	8 10.7 -37.5	114.4	7 45.9 -38.2	114.5	7 21.0 -39.0	114.6	6 55.9 -39.6	114.7	6 55.9 -39.6	114.7	6 55.9 -39.6	114.7	6 55.9 -39.6	114.7	15		
16	9 14.2 -34.5	114.6	8 49.2 -35.3	114.7	8 24.0 -36.1	114.9	7 58.7 -36.8	115.0	7 33.2 -37.5	115.1	7 07.7 -38.3	115.3	6 42.0 -39.0	115.4	6 16.3 -39.7	115.5	6 16.3 -39.7	115.5	6 16.3 -39.7	115.5	6 16.3 -39.7	115.5	16		
17	8 39.7 -34.5	115.4	8 13.9 -35.4	115.6	7 47.9 -36.1	115.7	7 21.9 -36.9	115.8	6 55.7 -37.6	115.9	6 29.4 -38.3	116.0	6 03.0 -39.0	116.1	5 36.6 -39.8	116.2	5 36.6 -39.8	116.2	5 36.6 -39.8	116.2	5 36.6 -39.8	116.2	17		
18	8 05.2 -34.7	116.3	7 38.5 -35.4	116.4	7 11.8 -36.2	116.5	6 45.0 -36.9	116.6	6 18.1 -37.7	116.7	5 51.1 -38.4	116.8	5 24.0 -39.1	116.9	4 56.8 -39.8	117.0	4 56.8 -39.8	117.0	4 56.8 -39.8	117.0	4 56.8 -39.8	117.0	18		
19	7 30.5 -34.8	117.1	7 03.1 -35.5	117.2	6 35.6 -36.2	117.3	6 08.1 -37.1	117.4	5 40.4 -37.7	117.5	5 12.7 -38.5	117.6	4 44.9 -39.2	117.7	4 17.0 -39.9	117.7	4 17.0 -39.9	117.7	4 17.0 -39.9	117.7	4 17.0 -39.9	117.7	19		
20	6 55.7 -34.9	117.9	6 27.6 -35.6	118.0	5 59.4 -36.4	118.1	5 31.0 -37.0	118.2	5 02.7 -37.8	118.3	4 34.2 -38.5	118.3	4 05.7 -39.2	118.4	3 37.1 -39.9	118.5	3 37.1 -39.9	118.5	3 37.1 -39.9	118.5	3 37.1 -39.9	118.5	20		
21	6 20.8 -34.9	118.7	5 52.0 -35.7	118.8	5 23.0 -36.4	118.8	4 54.0 -37.2	119.0	4 24.9 -37.9	119.1	3 55.7 -38.6	119.1	3 26.5 -39.3	119.2	2 57.2 -39.9	119.2	2 57.2 -39.9	119.2	2 57.2 -39.9	119.2	2 57.2 -39.9	119.2	21		
22	5 45.9 -35.0	119.5	5 16.3 -35.7	119.6	4 46.6 -36.5	119.7	4 16.8 -37.1	119.8	3 47.0 -37.9	119.8	3 17.1 -38.5	119.9	2 47.2 -39.2	119.9	2 17.3 -40.0	120.0	2 17.3 -40.0	120.0	2 17.3 -40.0	120.0	2 17.3 -40.0	120.0	22		
23	5 10.9 -35.0	120.4	4 40.6 -35.8	120.4	4 10.1 -36.5	120.5	3 39.7 -37.3	120.6	3 09.1 -37.9	120.6	2 38.6 -38.7	120.7	2 08.0 -39.3	120.7	1 37.3 -40.0	120.7	1 37.3 -40.0	120.7	1 37.3 -40.0	120.7	1 37.3 -40.0	120.7	23		
24	4 35.9 -35.2	121.2	4 04.8 -35.9	121.2	3 33.6 -36.5	121.3	3 02.4 -37.2	121.3	2 31.2 -37.9	121.4	1 59.9 -38.6	121.4	1 28.7 -39.4	121.4	0 57.3 -39.9	121.5	0 57.3 -39.9	121.5	0 57.3 -39.9	121.5	0 57.3 -39.9	121.5	24		
25	4 00.7 -35.1	122.0	3 28.9 -35.9	122.0	2 57.1 -36.6	122.1	2 25.2 -37.3	122.1	1 53.3 -38.0	122.2	1 21.3 -38.6	122.2	0 49.3 -39.3	122.2	0 17.4 -40.0	122.2	0 17.4 -40.0	122.2	0 17.4 -40.0	122.2	0 17.4 -40.0	122.2	25		
26	3 25.6 -35.2	122.8	2 53.0 -35.8	122.8	2 03.6 -36.7	123.0	1 00.7 +36.0	123.0	0 00.7 +36.5	123.0	0 40.7 +36.5	123.0	0 22.6 +40.0	123.0	0 22.6 +40.0	123.0	0 22.6 +40.0	123.0	0 22.6 +40.0	123.0	0 22.6 +40.0	123.0	26		
27	3 02.4 +35.2	123.6	3 02.4 +35.4	123.6	2 73.8 +36.1	123.7	2 42.4 +36.4	123.7	1 42.4 +36.5	123.7	0 42.4 +37.1	123.7	0 22.7 +38.4	123.7	0 22.7 +38.4	123.7	0 22.7 +38.4	123.7	0 22.7 +38.4	123.7	0 22.7 +38.4	123.7	27		
28	3 37.6 +35.2	123.6	4 18.2 +35.7	123.6	4 18.2 +35.7	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	3 59.6 +36.4	123.6	28		
29	4 12.8 +35.1	124.7	4 27.1 +35.6	124.7	4 27.1 +35.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	3 19.4 +36.6	124.7	29		
30	4 47.9 +35.0	124.8	4 27.1 +35.6	124.8	4 27.1 +35.6	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	3 19.4 +36.7	124.8	30		
31	4 22.7 +35.0	124.8	4 22.7 +35.0																						

70°, 290° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.				
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.				
0	17	13.8	+31.3	100.3	17	02.9	+32.2	100.6	16	51.7	+33.1	100.9	16	40.1	+34.0	101.2	16	28.3	+34.9	101.5	16	16.2	+35.8	101.8	15	51.1	+37.5	102.4	0
1	17	45.1	+31.0	99.4	17	35.1	+31.9	99.7	17	24.8	+32.8	100.0	17	14.1	+33.8	100.4	17	03.2	+34.7	100.7	16	52.0	+35.5	101.0	16	28.6	+37.2	101.5	1
2	18	16.1	+30.8	98.5	18	07.0	+31.8	98.8	17	57.6	+32.7	99.2	17	47.9	+33.6	99.5	17	37.9	+34.4	99.8	17	27.5	+35.3	100.1	17	16.8	+36.2	100.4	2
3	18	46.9	+30.5	97.6	18	38.8	+31.4	98.0	18	30.3	+32.4	98.3	18	21.5	+33.3	98.6	18	12.3	+34.2	98.9	18	02.8	+35.1	99.3	17	53.0	+36.0	99.6	3
4	19	17.4	+30.3	96.7	19	10.2	+31.2	97.1	19	02.7	+32.1	97.4	18	54.8	+33.1	97.7	18	46.5	+34.0	98.1	18	37.9	+34.9	98.4	18	29.0	+35.8	98.7	4
5	19	47.7	+29.8	95.8	19	41.4	+31.0	96.1	19	34.8	+31.9	96.5	19	27.9	+32.8	96.9	19	20.5	+33.7	97.2	19	12.8	+34.6	97.5	19	04.8	+35.5	97.9	5
6	20	17.6	+29.7	94.9	20	12.4	+30.6	95.2	20	06.7	+31.6	95.6	20	00.7	+32.5	96.0	19	54.2	+33.5	96.3	19	47.4	+34.4	96.7	19	40.3	+35.3	97.0	6
7	20	47.3	+29.4	93.9	20	43.0	+30.4	94.3	20	38.3	+31.3	94.7	20	33.2	+32.3	95.1	20	27.7	+33.2	95.4	20	21.8	+34.1	95.8	20	15.6	+35.0	96.2	7
8	21	16.7	+29.1	93.0	21	13.4	+30.0	93.4	21	09.6	+31.0	93.8	21	05.5	+31.9	94.2	21	00.9	+32.9	94.5	20	55.9	+33.9	94.9	20	50.6	+34.8	95.3	8
9	21	45.8	+28.7	92.1	21	43.4	+29.7	92.5	21	40.6	+30.7	92.9	21	37.4	+31.7	93.3	21	33.8	+32.6	93.7	21	29.8	+33.6	94.0	21	25.4	+34.4	94.4	9
10	22	14.5	+28.4	91.1	22	13.1	+29.5	91.5	22	11.3	+30.4	91.9	22	09.1	+31.4	92.3	22	06.4	+32.4	92.7	22	03.4	+33.2	93.2	21	59.8	+34.2	93.6	10
11	22	42.9	+28.1	90.2	22	42.6	+29.0	90.6	22	41.7	+30.1	91.0	22	40.5	+31.0	91.4	22	38.8	+32.0	91.8	22	36.6	+33.0	92.3	22	34.0	+34.0	92.7	11
12	23	11.0	+27.8	89.2	23	11.6	+28.8	88.6	23	11.8	+29.7	90.1	23	11.5	+30.7	90.5	23	10.8	+31.7	90.9	23	09.6	+32.6	91.3	23	08.0	+33.6	91.8	12
13	23	38.8	+27.3	88.2	23	40.4	+28.3	88.7	23	41.5	+29.4	89.1	23	42.2	+30.4	89.6	23	42.5	+31.3	90.0	23	42.2	+32.4	90.4	23	41.6	+33.2	90.9	13
14	24	60.1	+27.0	87.3	24	08.7	+28.1	87.7	24	10.9	+29.0	88.2	24	12.6	+30.0	88.6	24	13.8	+31.0	89.1	24	14.6	+32.0	89.5	24	14.8	+33.0	90.4	14
15	24	33.1	+26.6	86.3	24	36.8	+27.6	86.7	24	39.9	+28.7	87.2	24	42.6	+29.7	87.7	24	44.8	+30.7	88.1	24	46.6	+31.6	88.6	24	47.8	+32.6	89.0	15
16	24	59.7	+26.2	85.3	25	04.4	+27.2	85.8	25	08.6	+28.3	86.2	25	12.3	+29.3	86.7	25	15.5	+30.3	87.2	25	18.2	+31.3	87.6	25	20.4	+32.3	88.1	16
17	25	25.9	+25.8	84.3	25	31.6	+26.9	84.8	25	36.9	+27.8	85.3	25	41.6	+28.9	85.7	25	45.8	+29.9	86.2	25	49.5	+30.9	86.7	25	52.7	+31.9	87.2	17
18	25	51.7	+25.4	83.3	25	58.5	+26.4	83.8	26	04.7	+27.5	84.3	26	10.5	+28.5	84.8	26	15.7	+29.5	85.2	26	20.4	+30.5	85.7	26	24.6	+31.5	86.2	18
19	26	17.1	+25.0	82.3	26	24.9	+26.0	82.8	26	32.2	+27.1	83.3	26	39.0	+28.1	83.8	26	45.2	+29.1	84.3	26	50.9	+30.2	84.8	26	56.1	+31.2	85.3	19
20	26	42.1	+24.5	81.3	26	50.9	+25.6	81.8	26	59.3	+26.6	82.3	27	07.1	+27.6	82.8	27	14.3	+28.7	83.3	27	21.1	+29.7	83.8	27	27.3	+30.7	84.3	20
21	27	06.6	+24.1	80.3	27	16.5	+25.2	80.8	27	25.9	+26.2	81.3	27	34.7	+27.3	81.8	27	43.0	+28.3	82.3	27	50.8	+29.3	82.8	28	04.7	+31.3	83.9	21
22	27	30.7	+23.6	79.2	27	41.7	+24.7	79.7	27	52.1	+25.7	80.3	28	02.0	+26.8	80.8	28	11.3	+27.9	81.3	28	20.1	+28.9	81.8	28	28.4	+29.9	82.4	22
23	27	54.3	+23.2	78.2	28	06.4	+24.2	78.7	28	17.8	+25.3	79.2	28	28.8	+26.3	79.8	28	39.2	+27.4	80.3	28	49.0	+28.4	80.8	28	58.3	+29.4	81.4	23
24	28	17.5	+22.7	77.1	28	30.6	+23.7	77.7	28	43.1	+24.8	78.2	28	55.1	+25.9	78.7	29	06.6	+26.9	79.3	29	17.4	+28.0	79.8	29	27.7	+29.1	80.4	24
25	28	40.2	+22.1	76.1	28	54.3	+23.3	76.6	29	07.9	+24.4	77.2	29	21.0	+25.4	77.7	29	33.5	+26.4	78.3	29	45.4	+27.5	78.8	29	56.8	+28.5	79.4	25
26	29	02.3	+21.7	75.0	29	17.6	+22.7	75.6	29	32.3	+23.8	76.1	29	46.4	+24.9	76.7	29	59.9	+26.0	77.2	30	12.9	+27.0	77.8	30	25.3	+28.1	78.4	26
27	29	24.0	+21.2	74.0	29	40.3	+22.3	74.5	29	56.1	+23.3	75.1	30	11.3	+24.4	75.6	30	25.9	+25.5	76.2	30	39.9	+26.6	76.8	30	53.4	+27.6	77.3	27
28	29	45.2	+20.6	72.9	30	02.6	+21.7	73.4	30	19.4	+22.8	74.0	30	35.7	+23.8	74.6	30	51.4	+24.9	75.1	31	06.5	+26.0	75.7	31	21.0	+27.1	76.3	28
29	30	05.8	+20.1	71.8	30	24.3	+21.2	72.4	30	42.2	+22.3	72.9	30	59.5	+23.4	73.5	31	16.3	+24.4	74.7	31	32.5	+25.5	74.7	31	48.1	+26.5	75.2	29
30	30	25.9	+19.6	70.7	30	45.5	+20.6	71.3	31	04.5	+21.7	71.8	31	22.9	+22.8	72.4	31	40.7	+23.9	73.0	31	58.0	+24.9	73.6	32	14.6	+26.1	74.2	30
31	30	45.5	+19.0	69.6	31	06.1	+20.1	70.2	31	26.2	+21.1	70.7	31	45.7	+22.2	71.3	32	04.6	+23.3	71.9	32	22.9	+24.4	72.5	32	40.7	+25.4	73.7	31
32	31	04.5	+18.4	68.5	31	26.2	+19.5	69.1	31	47.3	+20.6	69.6	32	07.9	+21.7	70.2	32	27.9	+22.8	70.8	32	47.3	+23.9	71.4	33	06.1	+24.9	72.0	32
33	31	22.9	+17.8	67.4	31	45.7	+18.9	68.0	32	07.9	+20.0	68.5	32	29.6	+21.1	69.1	32	50.7	+22.1	69.7	33	11.2	+23.2	70.3	33	31.0	+24.4	71.0	33
34	31	40.7	+17.3	66.3	32	04.8	+18.3	66.7	32	27.9	+19.4	67.4	32	50.7	+20.5	68.0	33	12.8	+21.6	68.6	33	34.4	+22.7	69.2	33	55.4	+23.7	69.9	34
35	31	58.0	+16.6	65.1	32	22.9	+17.8	65.7	32	47.3	+18.8	66.3	33	11.2	+19.8	66.9	33	34.4	+21.0	67.5	33	57.1	+22.0	68.1	34	19.1	+23.2	68.7	35
36	32	14.6	+16.1	64.0	33	06.1	+18.2	64.6	33	35.7	+19.3	65.2	35	16.9	+15.3	65.8	35	47.7	+17.6	66.4	35	50.8	+20.3	67.0	34	42.3	+22.5	67.6	36
37	32	30.7	+15.4	62.9	32	57.8	+16.4	63.4	33	24.3	+17.6	64.0	33	50.3	+18.6	64.6	34	15.7	+19.8	65.2	34	40.6	+20.8	65.9	35	24.8	+23.0	67.1	

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 70°, 290°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	17	13.8	-31.6	100.3	17	02.9	-32.5	100.6	16	51.7	-33.4	100.9	16	40.1	-34.2	101.2	16	28.3	-35.1	101.5	16	16.2	-35.9	101.8	16	03.8	-36.8	102.1	15	51.1	-37.6	102.4	0
1	16	42.2	-31.7	101.2	16	30.4	-32.6	101.5	16	18.3	-33.5	101.8	16	05.9	-34.4	102.1	15	53.2	-35.2	102.3	15	40.3	-36.2	102.6	15	27.0	-37.0	102.9	15	13.5	-37.8	103.2	1
2	16	10.5	-32.0	102.1	15	57.8	-32.9	102.4	15	44.8	-33.8	102.6	15	31.5	-34.6	102.9	15	18.0	-35.5	103.2	15	04.1	-36.3	103.5	14	50.0	-37.1	103.7	14	35.7	-38.0	104.0	2
3	15	38.5	-32.2	103.0	15	24.9	-33.1	103.2	15	11.0	-33.9	103.5	14	56.9	-34.8	103.8	14	42.5	-35.7	104.0	14	27.8	-36.5	104.3	14	12.9	-37.3	104.5	13	57.7	-38.1	104.8	3
4	15	06.3	-32.3	103.8	14	51.8	-33.2	104.1	14	37.1	-34.1	104.4	14	22.1	-35.0	104.6	14	06.8	-35.8	104.9	13	51.3	-36.6	105.1	13	35.6	-37.5	105.3	13	19.6	-38.3	105.6	4
5	14	34.0	-32.6	104.7	14	18.6	-33.1	105.0	14	03.0	-34.3	105.2	13	47.1	-35.1	105.4	13	31.0	-36.0	105.7	13	14.7	-36.8	105.9	12	58.1	-37.6	106.1	12	41.3	-38.4	106.4	5
6	14	01.4	-32.8	105.6	13	45.1	-33.6	105.8	13	28.7	-34.5	106.1	13	12.0	-35.3	106.3	12	55.0	-36.1	106.5	12	37.9	-37.0	106.7	12	20.5	-37.7	106.9	12	02.9	-38.5	107.1	6
7	13	28.6	-32.9	106.4	13	11.5	-33.8	106.7	12	54.2	-34.6	106.9	12	36.7	-35.5	107.1	12	18.9	-36.3	107.3	12	00.9	-37.1	107.5	11	42.8	-37.9	107.7	11	24.4	-38.7	107.9	7
8	12	55.7	-33.1	107.3	12	37.7	-33.9	107.5	12	19.6	-34.8	107.7	12	01.2	-35.6	107.9	11	42.6	-36.4	108.1	11	23.8	-37.2	108.3	11	04.9	-38.0	108.5	10	45.7	-38.7	108.7	8
9	12	22.6	-33.3	108.2	12	03.8	-34.1	108.4	11	44.8	-34.9	108.6	11	25.6	-35.8	108.8	11	06.2	-36.5	108.9	10	46.3	-37.3	109.1	10	26.9	-38.1	109.3	10	07.0	-38.9	109.5	9
10	11	49.3	-33.4	109.0	11	29.7	-34.3	109.2	11	09.9	-35.1	109.4	10	49.8	-35.8	109.6	10	29.7	-36.7	109.8	10	09.3	-37.5	109.9	9	48.8	-38.3	110.1	9	28.1	-39.0	110.2	10
11	11	15.9	-33.5	109.9	10	55.4	-34.3	110.0	10	34.8	-35.2	110.2	10	14.0	-36.0	110.4	9	53.0	-36.8	110.6	9	31.8	-37.5	110.7	9	10.5	-38.3	110.9	8	49.1	-39.1	111.0	11
12	10	42.4	-33.7	110.7	10	21.1	-34.5	110.9	9	59.6	-35.3	111.0	9	38.0	-36.1	111.2	9	16.2	-36.9	111.4	8	54.3	-37.7	111.5	8	10.0	-39.2	111.8	12				
13	10	08.7	-33.9	111.5	9	46.6	-34.7	111.7	9	24.3	-35.4	111.9	9	01.9	-36.2	112.0	8	39.3	-37.0	112.2	8	16.6	-37.7	112.3	7	30.8	-39.2	112.6	13				
14	9	34.8	-33.9	112.4	9	11.9	-34.7	112.5	8	48.9	-35.6	112.7	8	25.7	-36.3	112.8	8	02.3	-37.1	113.0	7	38.9	-37.9	113.1	7	15.3	-38.6	113.2	14				
15	9	00.9	-34.0	113.2	8	37.2	-34.9	113.4	8	13.3	-35.6	113.5	7	49.4	-36.4	113.6	7	25.2	-37.1	113.7	7	01.0	-37.9	113.9	6	36.7	-38.6	114.0	15				
16	8	26.9	-34.2	114.0	8	02.3	-34.9	114.2	7	37.7	-35.7	114.3	7	13.0	-36.5	114.4	6	48.1	-37.3	114.5	6	23.1	-38.0	114.6	5	58.1	-38.8	114.7	16				
17	7	52.7	-34.3	114.9	7	27.4	-35.0	115.0	7	02.0	-35.8	115.1	6	36.5	-36.6	115.2	6	10.8	-37.3	115.3	5	45.1	-38.0	115.4	5	19.3	-38.7	115.5	17				
18	7	18.4	-34.3	115.7	6	52.4	-35.2	115.8	6	26.2	-35.9	115.9	5	59.9	-36.6	116.0	5	07.1	-38.1	116.2	4	40.6	-38.9	116.3	4	14.0	-39.6	116.3	18				
19	6	44.1	-34.4	116.5	6	17.2	-35.1	116.6	5	50.3	-35.9	116.7	5	23.3	-36.7	116.8	4	56.2	-37.5	116.9	4	0.17	-39.0	117.0	3	34.4	-39.5	117.1	19				
20	6	09.7	-34.5	117.4	5	42.1	-35.3	117.5	5	14.4	-36.1	117.5	4	46.6	-36.8	117.6	4	18.7	-37.4	117.7	3	50.8	-38.2	117.7	2	54.9	-39.6	117.9	20				
21	5	35.2	-34.6	118.2	5	06.8	-35.4	118.3	4	38.3	-36.0	118.3	4	09.8	-36.8	118.4	3	41.3	-37.6	118.5	2	44.0	-39.0	118.6	2	15.3	-39.7	118.6	21				
22	5	00.6	-34.6	119.0	4	31.5	-35.4	119.1	4	02.3	-36.1	119.1	3	33.0	-36.8	119.2	3	03.7	-37.5	119.2	2	34.4	-38.2	119.3	1	35.6	-39.6	119.4	22				
23	4	26.0	-34.7	119.8	3	56.1	-35.4	119.9	3	26.2	-36.2	119.9	2	56.2	-36.9	120.0	2	26.2	-37.6	120.0	1	56.2	-38.3	120.1	1	26.1	-39.0	120.1	23				
24	3	51.3	-34.8	120.6	3	20.7	-35.5	120.7	2	50.0	-36.2	120.7	2	19.3	-36.9	120.8	1	11.0	-37.6	121.6	0	47.1	-39.0	121.6	0	16.3	-39.6	120.9	24				
25	3	16.5	-34.7	121.5	2	45.2	-35.5	121.5	2	13.8	-36.2	121.5	1	42.4	-36.9	121.6	0	39.6	-38.3	121.6	0	08.1	-38.9	121.6	0	23.3	+39.7	58.4	25				
26	2	41.8	-34.9	122.3	2	09.7	-35.5	122.3	1	37.6	-36.2	122.3	0	05.5	-36.9	122.4	0	30.8	+39.0	57.6	1	03.0	+39.6	57.6	26								
27	2	06.9	-34.8	123.1	1	34.2	-35.6	123.1	0	28.1	-36.6	123.1	0	28.6	-36.9	123.1	0	0	+3.1	-38.3	122.4	0	0	+3.0	-38.3	122.4	27						
28	1	32.1	-34.8	123.9	0	58.6	-35.5	123.9	0	25.2	-36.3	123.9	0	28.6	-36.9	123.9	0	0	+3.1	-38.3	122.4	0	22.2	+39.6	56.1	28							
29	0	57.3	-34.9	124.7	0	23.1	-35.6	124.7	0	11.1	-36.2	125.3	0	08.3	+37.0	56.1	0	04.2	+37.6	56.9	1	12.8	+39.0	56.9	29								
30	0	22.4	-34.9	125.5	0	12.5	+35.5	54.5	0	47.3	+36.3	54.5	1	22.2	+36.9	54.5	1	57.0	+37.6	54.5	2	31.8	+38.3	54.5	3	41.4	+39.5	54.6	30				
31	0	12.5	+34.8	53.7	0	48.0	+35.6	53.7	1	23.6	+36.2	53.7	1	59.1	+36.9	53.7	2	34.6	+37.6	53.7	3	10.1	+38.2	53.8	4	20.9	+39.5	53.9	31				
32	0	47.3	+34.9	52.8	1	23.6	+35.5	52.9	1	59.8	+36.2	52.9	2	36.0	+36.8	52.9	3	12.2	+37.5	53.0	3	48.8	+38.3	53.1	5	00.4	+39.4	53.1	32				
33	1	22.2	+34.8	52.0	1	59.1	+35.5	52.1	2	36.0	+36.2	52.1	3	12.8	+36.9	52.1	3	49.7	+37.4	52.2	4	26.4	+38.1	52.3	5	39.8	+39.4	52.4	33				
34	1	57.0	+34.8	51.2	2	34.6	+35.5	51.2	3	12.2	+36.1	51.3	3	49.7	+36.7	51.4	4	27.1	+37.4	51.4	5	04.5	+38.1	51.5	6	19.2	+39.3	51.6	34				
35	2	31.8	+34.8	50.4	3	10.1	+35.4	50.4	3	48.3	+36.1	50.5	5	04.5	+37.4	50.6	5	42.6	+38.0	50.7	6	20.6	+38.6	50.8	6	58.5	+39.2	50.8	35				
36	3	06.6	+34.8	49.6	3	45.5	+35.4	49.6	4	24.4	+36.0	49.7	5	03.2	+36.8	49.7	5	41.9	+37.3	49.8	6	20.6	+37.9	49.									

71°, 289° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.								
0	16	22.6	+31.2	99.8	16	12.3	+32.0	100.1	16	01.6	+33.0	100.3	15	50.7	+33.9	100.6	15	39.5	+34.8	100.9	15	28.0	+35.7	101.2	15	16.3	+36.4	101.4	15	04.2	+37.3	101.7	0
1	16	53.8	+30.9	98.9	16	44.3	+31.9	99.2	16	34.6	+32.8	99.5	16	24.6	+33.7	99.8	16	14.3	+34.5	100.1	16	03.7	+35.4	100.3	15	52.7	+36.3	100.6	15	41.5	+37.2	100.9	1
2	17	24.7	+30.7	98.0	17	16.2	+31.6	98.3	17	07.4	+32.5	98.6	16	58.3	+33.4	98.9	16	48.8	+34.3	99.2	16	39.1	+35.2	99.5	16	29.0	+36.1	99.8	16	18.7	+36.9	100.1	2
3	17	55.4	+30.4	97.1	17	47.8	+31.4	97.4	17	39.9	+32.3	97.7	17	31.7	+33.2	98.0	17	23.1	+34.2	98.3	17	14.3	+35.0	98.6	17	05.1	+35.9	99.0	16	55.6	+36.7	99.3	3
4	18	25.8	+30.2	96.2	18	19.2	+31.1	96.5	18	12.2	+32.0	96.8	18	04.9	+33.0	97.2	17	57.3	+33.8	97.5	17	49.3	+34.8	97.8	17	41.0	+35.6	98.1	17	32.3	+36.6	98.4	4
5	18	56.0	+29.8	95.3	18	50.3	+30.8	95.6	18	44.2	+31.8	95.9	18	37.9	+32.7	96.3	18	31.1	+33.7	96.6	18	24.1	+34.5	96.9	18	16.6	+35.5	97.3	18	08.9	+36.3	97.6	5
6	19	25.9	+29.6	94.3	19	21.1	+30.6	94.7	19	16.0	+31.6	95.0	19	10.6	+32.5	95.4	19	04.8	+33.4	95.7	18	58.6	+34.3	96.1	18	52.1	+35.2	96.4	18	45.2	+36.1	96.8	6
7	19	55.5	+29.3	93.4	19	51.7	+30.3	93.8	19	47.6	+31.2	94.1	19	43.1	+32.2	94.5	19	38.2	+33.1	94.9	19	32.9	+34.1	95.2	19	27.3	+34.9	95.6	19	21.3	+35.8	95.9	7
8	20	24.8	+29.0	92.5	20	22.0	+30.0	92.9	20	18.8	+31.0	93.2	20	15.3	+31.9	93.6	20	11.3	+32.9	94.0	20	07.0	+33.7	94.3	20	02.2	+34.7	94.7	19	57.1	+35.6	95.1	8
9	20	53.8	+28.8	91.6	20	52.0	+29.7	91.9	20	49.8	+30.7	92.3	20	47.2	+31.6	92.7	20	44.2	+32.5	93.1	20	40.7	+33.6	93.4	20	36.9	+34.5	93.8	20	32.7	+35.4	94.2	9
10	21	22.6	+28.4	90.6	21	21.7	+29.4	91.0	21	20.5	+30.4	91.4	21	18.8	+31.4	91.8	21	16.7	+32.3	92.2	21	14.3	+33.2	92.6	21	11.4	+34.1	92.9	21	08.1	+35.1	93.3	10
11	21	51.0	+28.1	89.7	21	51.1	+29.1	90.1	21	50.9	+30.0	90.5	21	50.2	+31.0	90.9	21	49.0	+32.0	91.3	21	47.5	+32.9	91.7	21	45.5	+33.9	92.1	21	43.2	+34.8	92.5	11
12	22	19.1	+27.7	88.7	22	20.2	+28.8	89.1	22	20.9	+29.8	89.5	22	21.2	+30.7	89.9	22	21.0	+31.7	90.4	22	20.4	+32.7	90.8	22	19.4	+33.6	91.2	22	18.0	+34.5	91.6	12
13	22	46.8	+27.4	87.7	22	49.0	+28.4	88.2	22	50.7	+29.4	88.6	22	51.9	+30.4	89.0	22	52.7	+31.4	89.4	22	53.1	+32.3	89.9	22	53.0	+33.3	90.3	22	52.5	+34.2	90.7	13
14	23	14.2	+27.1	86.8	23	17.4	+28.0	87.2	23	20.1	+29.0	87.6	23	22.3	+30.1	88.1	23	24.1	+31.0	88.5	23	25.4	+32.0	88.9	23	26.3	+33.0	89.4	23	26.7	+34.0	89.8	14
15	23	41.3	+26.6	85.8	23	45.4	+27.7	86.2	23	49.1	+28.7	86.7	23	52.4	+29.7	87.1	23	55.1	+30.7	87.6	23	57.4	+31.7	88.0	23	59.3	+32.6	88.5	24	00.7	+33.6	88.9	15
16	24	0.7	+26.3	84.8	24	13.1	+27.3	85.3	24	17.8	+28.4	85.7	24	22.1	+29.3	86.2	24	25.8	+30.4	86.6	24	29.1	+31.3	87.1	24	31.9	+32.3	87.5	24	34.3	+33.2	88.0	16
17	24	34.2	+26.0	83.8	24	40.4	+27.0	84.3	24	46.2	+27.9	84.8	24	51.4	+29.0	85.2	24	56.2	+29.9	85.7	25	00.4	+31.0	86.1	25	04.2	+32.0	86.6	25	07.5	+33.0	87.1	17
18	25	0.2	+25.5	82.9	25	07.4	+26.5	83.3	25	14.1	+27.6	83.8	25	20.4	+28.6	84.3	25	26.1	+29.6	84.7	25	31.4	+30.6	85.2	25	36.2	+31.6	85.7	25	40.5	+32.5	86.2	18
19	25	25.7	+25.1	81.8	25	33.9	+26.2	82.3	25	41.7	+27.2	82.8	25	49.0	+28.2	83.3	25	55.7	+29.3	83.8	26	02.0	+30.2	84.2	26	07.8	+31.2	84.7	26	13.0	+32.2	85.2	19
20	25	50.8	+24.7	80.8	26	00.1	+25.7	81.3	26	08.9	+26.7	81.8	26	17.2	+27.8	82.3	26	25.0	+28.8	82.8	26	32.2	+29.9	83.3	26	39.0	+30.8	83.8	26	45.2	+31.9	84.3	20
21	26	15.5	+24.2	79.8	26	25.8	+25.3	80.3	26	35.6	+26.4	80.8	26	45.0	+27.3	81.3	26	53.8	+28.4	81.8	27	02.1	+29.4	82.3	27	09.8	+30.5	82.8	27	17.1	+31.4	83.3	21
22	26	39.7	+23.8	78.8	26	51.1	+24.9	79.3	27	02.0	+25.9	79.8	27	12.3	+27.0	80.3	27	22.2	+28.0	80.8	27	31.5	+29.0	81.3	27	40.3	+30.0	81.8	27	48.5	+31.1	82.4	22
23	27	0.3	+23.4	77.8	27	16.0	+24.4	78.3	27	27.9	+25.5	78.8	27	39.3	+26.5	79.3	27	50.2	+27.5	79.8	28	00.5	+28.6	80.3	28	10.3	+29.6	80.9	28	19.6	+30.6	81.4	23
24	27	26.9	+22.9	76.7	27	40.4	+23.9	77.2	27	53.4	+25.0	77.8	28	05.8	+26.1	78.3	28	17.7	+27.1	78.8	28	29.1	+28.1	79.3	28	39.9	+29.2	79.9	28	50.2	+30.2	80.4	24
25	27	49.8	+22.4	75.7	28	04.3	+23.5	76.2	28	18.4	+24.5	76.7	28	31.9	+25.6	77.3	28	44.8	+26.7	77.8	28	57.2	+27.7	78.3	29	09.1	+28.7	78.9	29	20.4	+29.7	79.4	25
26	28	12.2	+21.9	74.6	28	27.8	+23.0	75.2	28	42.9	+24.1	75.7	29	57.5	+25.1	76.2	29	11.5	+26.1	76.8	29	24.9	+27.2	77.3	29	37.8	+28.3	77.9	29	50.1	+29.3	78.4	26
27	28	34.1	+21.5	73.6	28	50.8	+22.5	74.1	29	07.0	+23.5	74.6	29	22.6	+24.6	75.2	29	37.6	+25.7	75.7	29	52.1	+26.8	76.3	30	06.1	+27.8	76.9	30	19.4	+28.9	77.4	27
28	28	55.6	+20.9	72.5	29	13.3	+22.0	73.1	29	30.5	+23.1	73.6	29	47.2	+24.1	74.1	30	03.3	+25.2	74.7	30	18.9	+26.2	75.3	30	33.9	+27.3	76.4	30	48.3	+28.3	76.4	28
29	29	16.5	+20.4	71.5	29	35.3	+21.5	72.0	29	53.6	+22.6	72.5	30	11.3	+23.7	73.1	30	28.5	+24.7	73.6	30	45.1	+25.8	74.2	31	01.2	+26.8	74.8	31	16.6	+27.9	75.4	29
30	29	36.9	+19.9	70.4	29	56.8	+21.0	71.5	30	16.2	+22.0	71.5	30	35.0	+23.1	72.0	30	53.2	+24.2	72.6	31	10.9	+25.2	73.2	31	28.0	+26.3	73.7	31	44.5	+27.3	74.3	30
31	31	10.9	+17.1	64.9	31	36.1	+18.2	65.4	32	24.9	+20.3	66.0	32	45.2	+19.7	65.4	33	09.9	+20.7	66.0	33	34.0	+21.8	66.6	33	57.5	+22.9	67.3	34	20.4	+23.9	67.9	36
32	31	54.9	+9.4	51.0	34	32.5	+10.3	51.5	35	09.6	+11.3	52.1	35	46.2	+12.4	52.6	36	22.4	+13.3	53.2	36	58.1	+14.3	53.8	37	33.2	+15.4	54.4	35	45.7	+16.6	55.1	37
33	32	0.4	+8.7	49.8	34	42.8	+9.7	50.3	35	20.9	+10.7	50.9	35	58.6	+11.6	51.4	36	35.7</td															

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 71° , 289°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	16	22.6	-31.4	99.8	16	12.3	-32.3	100.1	16	01.6	-33.1	100.3	15	50.7	-34.0	100.6	15	39.5	-34.9	100.9	15	28.0	-35.8	101.2	15	16.3	-36.7	101.4	15	04.2	-37.4	101.7	0
1	15	51.2	-31.6	100.7	15	40.0	-32.5	100.9	15	28.5	-33.4	101.2	15	16.7	-34.3	101.5	15	04.6	-35.1	101.7	14	52.2	-35.9	102.0	14	39.6	-36.8	102.3	14	26.8	-37.7	102.5	1
2	15	19.6	-31.8	101.5	15	07.5	-32.7	101.8	14	55.1	-33.6	102.1	14	42.4	-34.4	102.3	14	29.5	-35.3	102.6	14	16.3	-36.2	102.8	14	02.8	-37.0	103.1	13	49.1	-37.8	103.3	2
3	14	47.8	-32.0	102.4	14	34.8	-32.9	102.7	14	21.5	-33.8	102.9	14	08.0	-34.7	103.2	13	54.2	-35.5	103.4	13	40.1	-36.3	103.7	13	25.8	-37.1	103.9	13	11.3	-37.9	104.1	3
4	14	15.8	-32.2	103.3	14	01.9	-33.1	103.5	13	47.7	-33.9	103.8	13	33.3	-34.8	104.0	13	18.7	-35.6	104.2	13	03.8	-36.5	104.5	12	48.7	-37.3	104.7	12	33.4	-38.1	104.9	4
5	13	43.6	-32.3	104.2	13	28.8	-33.2	104.4	13	13.8	-34.1	104.6	12	58.5	-34.9	104.8	12	43.1	-35.8	105.1	12	27.3	-36.6	105.3	12	11.4	-37.4	105.5	11	55.3	-38.2	105.7	5
6	13	11.3	-32.6	105.0	12	55.6	-33.4	105.2	12	39.7	-34.3	105.5	12	23.6	-35.1	105.7	12	07.3	-36.0	105.9	11	50.7	-36.7	106.1	11	34.0	-37.6	106.3	11	17.1	-38.4	106.5	6
7	12	38.7	-32.7	105.9	12	22.2	-33.6	106.1	12	05.4	-34.4	106.3	11	48.5	-35.3	106.5	11	31.3	-36.0	106.7	11	14.0	-36.9	106.9	10	56.4	-37.6	107.1	10	38.7	-38.4	107.3	7
8	12	06.0	-32.9	106.7	11	48.6	-33.7	106.9	11	31.0	-34.5	107.1	11	13.2	-35.3	107.3	10	55.3	-36.2	107.5	10	37.1	-37.0	107.7	10	00.3	-38.6	108.1	8				
9	11	33.1	-33.0	107.6	11	14.9	-33.8	107.8	10	56.5	-34.7	108.0	10	37.9	-35.6	108.2	10	19.1	-36.3	108.3	10	00.1	-37.1	108.7	9	21.7	-38.7	108.8	9				
10	11	00.1	-33.1	108.5	10	41.0	-34.0	108.6	10	21.8	-34.8	108.8	10	02.3	-35.6	109.0	9	42.8	-36.5	109.1	9	23.0	-37.2	109.3	9	03.1	-38.0	109.5	8	43.0	-38.7	109.6	10
11	10	27.0	-33.3	109.3	10	07.0	-34.1	109.5	9	47.0	-35.0	109.6	9	26.7	-35.7	109.8	9	06.3	-36.5	109.9	8	45.8	-37.3	110.1	8	25.1	-38.1	110.2	8	04.3	-38.9	110.4	11
12	9	53.7	-33.5	110.1	9	32.9	-34.2	110.3	9	12.0	-35.0	110.5	8	51.0	-35.9	110.6	8	29.8	-36.7	110.8	8	08.5	-37.5	110.9	7	47.0	-38.2	111.0	7	25.4	-38.9	111.1	12
13	9	20.2	-33.5	111.0	8	58.7	-34.4	111.1	8	37.0	-35.2	111.3	8	15.1	-35.9	111.4	7	53.1	-36.7	111.6	7	31.0	-37.4	111.7	7	08.8	-38.2	111.8	6	46.5	-39.0	111.9	13
14	8	46.7	-33.6	111.8	8	24.3	-34.4	112.0	8	01.8	-35.2	112.1	7	39.2	-36.1	112.2	7	16.4	-36.8	112.4	6	53.6	-37.6	112.5	6	07.5	-39.1	112.7	14				
15	8	13.1	-33.8	112.7	7	49.9	-34.6	112.8	7	26.6	-35.4	112.9	7	03.1	-36.1	113.0	6	39.6	-36.9	113.1	6	16.0	-37.7	113.3	5	52.2	-38.3	113.4	15				
16	7	39.3	-33.8	113.5	7	15.3	-34.6	113.6	6	51.2	-35.4	113.7	6	27.0	-36.2	113.8	6	02.7	-36.9	113.9	5	38.3	-37.7	114.0	4	49.3	-39.2	114.2	16				
17	7	05.5	-34.0	114.3	6	40.7	-34.7	114.4	6	15.8	-35.5	114.5	5	50.8	-36.2	114.6	5	25.8	-37.0	114.7	5	00.6	-37.7	114.8	4	35.4	-38.5	114.9	17				
18	6	31.5	-34.0	115.2	6	06.0	-34.8	115.3	5	40.3	-35.6	115.4	5	14.6	-36.3	115.5	4	48.8	-37.1	115.6	4	22.9	-37.8	115.7	3	56.9	-38.5	115.7	18				
19	5	57.5	-34.1	116.0	5	31.2	-34.9	116.1	5	04.7	-35.6	116.2	4	38.3	-36.4	116.2	4	11.7	-37.1	116.3	3	45.1	-37.9	116.4	2	51.7	-39.3	116.5	19				
20	5	23.4	-34.2	116.8	4	56.3	-34.9	116.9	4	29.1	-35.7	117.0	4	01.9	-36.4	117.0	3	34.6	-37.2	117.1	3	07.2	-37.9	117.1	2	39.8	-38.6	117.2	20				
21	4	49.2	-34.2	117.6	4	21.4	-35.0	117.7	3	53.4	-35.7	117.8	3	25.5	-36.5	117.8	2	57.4	-37.2	117.9	2	29.3	-37.9	117.9	1	01.2	-38.6	118.0	21				
22	4	15.0	-34.2	118.5	3	46.4	-35.0	118.5	3	17.7	-35.7	118.6	2	49.0	-36.5	118.6	2	20.2	-37.2	118.7	1	51.4	-37.9	118.7	0	53.7	-39.3	118.7	22				
23	3	40.8	-34.4	119.3	3	11.4	-35.1	119.3	2	42.0	-35.8	119.4	2	12.5	-36.5	119.4	1	43.0	-37.2	119.5	1	13.5	-38.0	119.5	0	44.0	-38.7	119.5	23				
24	3	06.4	-34.3	120.1	2	36.3	-35.1	120.2	2	06.2	-35.9	120.2	1	36.0	-36.6	120.2	1	05.8	-37.3	120.2	0	35.5	-37.9	120.3	0	05.3	-38.6	120.3	24				
25	2	32.1	-34.4	120.9	2	01.2	-35.1	121.0	1	30.3	-35.8	121.0	0	59.4	-36.5	121.0	0	28.5	-37.2	121.0	0	02.4	-38.0	59.0	1	04.3	-39.3	59.0	25				
26	1	57.7	-34.4	121.8	1	26.1	-35.1	121.8	0	54.5	-35.8	121.8	0	18.7	-35.9	122.6	0	13.7	+36.5	57.4	0	40.4	+37.4	58.2	1	43.6	+39.3	58.2	26				
27	1	23.3	-34.4	122.6	0	51.0	-35.2	122.6	0	18.7	-35.9	122.6	0	17.2	+35.6	57.4	0	46.0	+37.2	57.4	1	18.3	+37.9	57.4	2	22.9	+39.2	57.5	27				
28	0	48.9	-34.5	123.4	0	15.8	-35.1	123.4	0	19.3	+35.2	55.8	0	17.2	+35.8	56.6	0	50.2	+36.6	56.6	2	29.2	+38.6	56.7	3	02.1	+39.3	56.7	28				
29	0	14.4	-34.4	124.2	0	19.3	+35.2	55.8	0	53.0	+35.9	55.8	1	26.8	+36.5	55.8	2	00.5	+37.2	55.8	2	34.1	+37.9	55.9	3	07.8	+38.5	55.9	29				
30	0	20.0	+34.5	55.0	0	54.5	+35.1	55.0	1	28.9	+35.8	55.0	2	03.3	+36.5	55.0	2	37.7	+37.1	55.1	3	12.0	+37.9	55.1	4	46.3	+38.5	55.1	4	20.6	+39.2	55.2	30
31	0	54.5	+34.4	54.2	1	29.6	+35.1	54.2	2	04.7	+35.8	54.2	2	39.8	+36.5	54.2	3	14.8	+37.2	54.3	3	49.9	+38.7	54.4	4	59.8	+39.1	54.4	31				
32	1	28.9	+34.4	53.3	2	04.7	+35.1	53.4	2	40.5	+35.8	53.4	3	16.3	+36.3	52.5	3	52.0	+37.1	53.5	4	27.7	+37.7	53.5	5	38.9	+39.0	53.7	32				
33	2	03.3	+34.4	52.5	2	39.8	+35.0	52.5	3	12.7	+35.7	52.6	3	52.7	+36.4	52.6	4	29.1	+37.0	52.7	5	05.4	+37.7	52.8	6	17.9	+39.0	52.9	33				
34	2	37.7	+34.3	51.7	3	14.8	+35.1	51.7	3	52.0	+35.7	51.7	4	29.1	+36.3	51.8	5	06.1	+37.0	51.9	5	43.1	+37.7	52.1	6	56.9	+38.9	52.2	34				
35	3	12.0	+34.3	50.9	3	49.9	+34.9	50.9	4	27.7	+35.6	51.0	5	05.4	+36.3	51.0	5	43.1	+36.9	51.1	6	20.8	+37.5	51.2	6	58.3	+38.2	51.3	35				
36	3	46.3	+34.3	50.0	4	24.8	+35.0	5																									

72°, 288° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	15 31.3 +31.1	99.2		15 21.6 +31.9	99.5		15 11.5 +32.9	99.8		15 01.2 +33.8	100.0		14 50.6 +34.7	100.3		14 39.8 +35.5	100.6		14 28.7 +36.3	100.8		14 17.3 +37.1	101.1		0
1	16 02.4 +30.8	98.3		15 53.5 +31.8	98.6		15 44.4 +32.6	98.9		15 35.0 +33.5	99.2		15 25.3 +34.4	99.5		15 15.3 +35.3	99.7		15 05.0 +36.1	100.0		14 54.4 +37.0	100.3		1
2	16 33.2 +30.6	97.4		16 25.3 +31.5	97.7		16 17.0 +32.5	98.0		16 08.5 +33.3	98.3		15 59.7 +34.2	98.6		15 50.6 +35.1	98.9		15 41.1 +36.0	99.2		15 31.4 +36.9	99.4		2
3	17 03.8 +30.3	96.5		16 56.8 +31.2	96.8		16 49.5 +32.1	97.2		16 41.8 +33.1	97.4		16 33.9 +34.0	97.7		16 25.7 +34.9	98.0		16 17.1 +35.8	98.3		16 08.3 +36.6	98.6		3
4	17 34.1 +30.1	95.6		17 28.0 +31.1	96.0		17 21.6 +32.0	96.3		17 14.9 +32.9	96.6		17 07.9 +33.8	96.9		17 00.6 +34.6	97.2		16 52.9 +35.6	97.5		16 44.9 +36.4	97.8		4
5	18 04.2 +29.8	94.7		17 59.1 +30.8	95.1		17 53.6 +31.7	95.4		17 47.8 +32.7	95.7		17 41.7 +33.6	96.0		17 35.2 +34.5	96.3		17 28.5 +35.3	96.6		17 21.3 +36.3	97.0		5
6	18 34.0 +29.6	93.8		18 29.9 +30.5	94.2		18 25.3 +31.5	94.5		18 20.5 +32.4	94.8		18 15.3 +33.3	95.1		18 09.7 +34.2	95.5		18 03.8 +35.1	95.8		17 57.6 +36.0	96.1		6
7	19 03.6 +29.3	92.9		19 00.4 +30.2	93.2		18 56.8 +31.2	93.6		18 52.9 +32.1	93.9		18 48.6 +33.1	94.3		18 43.9 +34.0	94.6		18 38.9 +34.9	94.9		18 33.6 +35.8	95.3		7
8	19 32.9 +29.0	92.0		19 30.6 +30.0	92.3		19 28.0 +30.9	92.7		19 25.0 +31.9	93.0		19 21.7 +32.8	93.4		19 17.9 +33.8	93.7		19 13.8 +34.7	94.1		19 09.4 +35.5	94.4		8
9	20 01.9 +28.7	91.0		20 00.6 +29.7	91.4		19 58.9 +30.7	91.8		19 56.9 +31.6	92.1		19 54.5 +32.5	92.5		19 51.7 +33.5	92.9		19 48.5 +34.4	93.2		19 44.9 +35.3	93.6		9
10	20 30.6 +28.4	90.1		20 30.3 +29.4	90.5		20 29.6 +30.4	90.9		20 28.5 +31.3	91.2		20 27.0 +32.3	91.6		20 25.2 +33.2	92.0		20 22.9 +34.1	92.3		20 20.2 +35.1	92.7		10
11	20 59.0 +28.1	89.2		20 59.7 +29.1	89.6		21 00.0 +30.0	89.9		20 59.8 +31.1	90.3		20 59.3 +32.0	90.7		20 58.4 +32.9	91.1		20 57.0 +33.9	91.5		20 55.3 +34.8	91.9		11
12	21 27.1 +27.8	88.2		21 28.8 +28.8	88.6		21 30.0 +29.8	89.0		21 30.9 +30.7	89.4		21 31.3 +31.7	89.8		21 31.3 +32.6	90.2		21 30.9 +33.6	90.6		21 30.1 +34.5	91.0		12
13	21 54.9 +27.5	87.3		21 57.6 +28.4	87.7		21 59.8 +29.4	88.1		22 01.6 +30.4	88.5		22 03.0 +31.4	88.9		22 03.9 +32.4	89.3		22 04.5 +33.3	89.7		22 04.6 +34.2	90.1		13
14	22 22.4 +27.1	86.3		22 26.0 +28.1	86.7		22 29.2 +29.1	87.1		22 32.0 +30.1	87.5		22 34.4 +31.0	88.0		22 36.3 +32.0	88.4		22 37.8 +33.0	88.8		22 38.8 +34.0	89.2		14
15	22 49.5 +26.7	85.3		22 54.1 +27.8	85.8		22 58.3 +28.8	86.2		23 02.1 +29.8	86.6		23 05.4 +30.8	87.0		23 08.3 +31.7	87.5		23 10.8 +32.6	87.9		23 12.8 +33.6	88.3		15
16	23 16.2 +26.4	84.4		23 21.9 +27.4	84.8		23 27.1 +28.4	85.2		23 31.9 +29.4	85.7		23 36.2 +30.4	86.1		23 40.0 +31.4	86.5		23 43.4 +32.4	87.0		23 46.4 +33.3	87.4		16
17	23 42.6 +26.0	83.4		23 49.3 +27.0	83.8		23 55.5 +28.1	84.3		24 01.3 +29.0	84.7		24 06.6 +30.0	85.2		24 11.4 +31.1	85.6		24 15.8 +32.0	86.0		24 19.7 +33.0	86.5		17
18	24 08.6 +25.7	82.4		24 16.3 +26.7	82.8		24 23.6 +27.6	83.3		24 30.3 +28.7	83.7		24 36.6 +29.7	84.2		24 42.5 +30.6	84.7		24 47.8 +31.7	85.1		24 52.7 +32.6	85.6		18
19	24 34.3 +25.2	81.4		24 43.0 +26.3	81.9		24 51.2 +27.3	82.3		24 59.0 +28.3	82.8		25 06.3 +29.3	83.2		25 13.1 +30.4	83.7		25 19.5 +31.3	84.2		25 25.3 +32.3	84.7		19
20	24 59.5 +24.8	80.4		25 09.3 +25.8	80.9		25 18.5 +26.9	81.3		25 27.3 +28.0	81.8		25 35.6 +29.0	82.3		25 43.5 +29.9	82.8		25 50.8 +30.9	83.2		25 57.6 +31.9	83.7		20
21	25 24.3 +24.5	79.4		25 35.1 +25.5	79.9		25 45.4 +26.5	80.3		25 55.3 +27.5	80.8		26 04.6 +28.5	81.3		26 13.4 +29.5	81.8		26 21.7 +30.6	82.3		26 29.5 +31.6	82.8		21
22	25 48.8 +24.0	78.4		26 00.6 +25.0	78.9		26 11.9 +26.1	79.3		26 22.8 +27.1	79.8		26 33.1 +28.2	80.3		26 42.9 +29.2	80.8		26 52.3 +30.1	81.3		27 01.1 +31.1	81.8		22
23	26 12.8 +23.5	77.4		26 25.6 +24.7	77.9		26 38.0 +25.7	78.3		26 49.9 +26.7	78.8		27 01.3 +27.7	79.3		27 12.1 +28.7	79.8		27 22.4 +29.8	80.3		27 32.2 +30.8	80.9		23
24	26 36.3 +23.2	76.3		26 50.3 +24.1	76.8		27 03.7 +25.2	77.3		27 16.6 +26.2	77.8		27 29.0 +27.3	78.3		27 40.8 +28.3	78.8		27 52.2 +29.3	79.4		28 03.0 +30.3	79.9		24
25	26 59.5 +22.6	75.3		27 14.4 +23.7	75.8		27 28.9 +24.8	76.3		27 42.8 +25.8	76.8		27 56.3 +26.8	77.3		28 09.1 +27.9	77.9		28 21.5 +28.9	78.4		28 33.3 +29.9	78.9		25
26	27 22.1 +22.2	74.3		27 38.1 +23.3	74.8		27 53.7 +24.3	75.3		28 08.6 +25.4	75.8		28 23.1 +26.4	76.3		28 37.0 +27.4	76.8		28 50.4 +28.5	77.4		29 03.2 +29.5	77.9		26
27	27 44.3 +21.8	73.2		28 01.4 +22.8	73.7		28 18.0 +23.8	74.2		28 34.0 +24.9	74.8		28 49.5 +25.9	75.3		29 04.4 +27.0	75.8		29 18.9 +28.0	76.4		29 32.7 +29.0	76.9		27
28	28 06.1 +21.2	72.2		28 24.2 +22.3	72.7		28 41.8 +23.3	73.2		28 58.9 +24.4	73.7		29 15.4 +25.4	74.3		29 31.4 +26.5	74.8		29 46.9 +27.5	75.4		30 01.7 +28.6	75.9		28
29	28 27.3 +20.7	71.1		28 46.5 +21.8	71.6		29 05.1 +22.9	72.1		29 23.3 +23.9	72.7		29 40.8 +25.0	73.2		29 57.9 +26.0	73.8		30 14.4 +27.0	74.3		30 30.3 +28.1	74.9		29
30	28 48.0 +20.3	70.0		29 08.3 +21.3	70.6		29 28.0 +22.3	71.1		29 47.2 +23.4	71.6		30 05.8 +24.4	72.2		30 23.9 +25.5	72.7		30 41.4 +26.6	73.3		30 58.4 +27.6	73.9		30
31	29 08.3 +19.7	69.0		29 29.6 +20.7	69.5		29 50.3 +21.8	70.0		30 10.6 +22.8	70.6		30 30.2 +24.0	71.1		30 49.4 +25.0	71.7		31 08.0 +26.0	72.2		31 26.0 +27.1	72.8		31
32	29 28.0 +19.2	67.9		29 50.3 +20.3	68.4		30 12.1 +21.3	68.9		30 33.4 +22.4	69.5		30 54.2 +23.4	70.0		31 14.4 +24.7	70.6		31 34.0 +25.5	71.2		31 53.1 +26.5	71.8		32
33	29 47.2 +18.6	66.8		30 10.6 +19.6	67.3		30 33.4 +20.8	67.9		30 55.8 +21.8	68.4		31 17.6 +22.8	69.0		31 38.8 +23.9	69.5		31 59.5 +25.0	70.1		32 19.6 +26.0	70.7		33
34	30 05.8 +18.1	65.7		30 30.2 +19.2	66.2		32 16.4 +16.7	60.1		33 16.3 +17.7	60.6		33 45.5 +18.7	61.2		34 14.1 +19.8	61.8		34 42.2 +20.8	62.4		35 09.7 +21.9	63.0		40
35	30 49.4 +18.6	64.6		33 03.3 +19.0	65.1		33 40.4 +19.1	65.6		33 40.4 +17.0	59.5		34 04.2 +18.1	60.1		34 33.9 +19.1	60.6		35 03.0 +20.2	61.3		35 31.6 +21.2	61.9		41
36	30 41.4 +17.0	63.5		31 08.0 +18.0	64.0		31 34.0 +19.1	64.6		31 59.5 +20.1	65.1		32 24.5 +21.1	65.7		32 48.9 +22.2	66.3		33 12.7 +23.3	66.9		33 36.0 +24.4	67.5		36
37	30 58.4 +16.4	62.4		31 26.0 +17.4	62.9		31 53.1 +18.4	63.4		32 19.6 +19.5	64.0		32 45.6 +20.6	64.6		33 11.1 +21.6	65.2								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 72° , 288°

30°			31°			32°			33°			34°			35°			36°						
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.		
0	15	31.3	-31.2	99.2	15	21.6	-32.2	99.5	15	11.5	-33.0	99.8	15	01.2	-33.9	100.0	14	50.6	-34.8	100.3	14	39.8	-35.7	100.6
1	15	00.1	-31.4	100.1	14	49.4	-32.3	100.4	14	38.5	-33.2	100.6	14	27.3	-34.1	100.9	14	15.8	-34.9	101.1	14	04.1	-35.8	101.4
2	14	28.7	-31.7	101.0	14	17.1	-32.5	101.2	14	05.3	-33.5	101.5	13	53.2	-34.3	101.7	13	40.9	-35.2	102.0	13	28.3	-36.0	102.2
3	13	57.0	-31.8	101.9	13	44.6	-32.8	102.1	13	31.8	-33.5	102.3	13	18.9	-34.5	102.6	13	05.7	-35.3	102.8	12	52.3	-36.1	103.0
4	13	25.2	-32.0	102.7	13	11.8	-32.8	103.0	12	58.3	-33.8	103.2	12	44.4	-34.6	103.4	12	30.4	-35.4	103.6	12	16.2	-36.3	103.9
5	12	53.2	-32.2	103.6	12	39.0	-33.1	103.8	12	24.5	-33.9	104.0	12	09.8	-34.7	104.3	11	55.0	-35.6	104.5	11	39.9	-36.5	104.7
6	12	21.0	-32.3	104.5	12	05.9	-33.2	104.7	11	50.6	-34.1	104.9	11	35.1	-34.9	105.1	11	19.4	-35.8	105.3	11	03.4	-36.5	105.5
7	11	48.7	-32.5	105.3	11	32.7	-33.4	105.5	11	16.5	-34.2	105.7	11	00.2	-35.1	105.9	10	43.6	-35.8	106.1	10	26.9	-36.7	106.3
8	11	16.2	-32.7	106.2	10	59.3	-33.4	106.4	10	42.3	-34.3	106.6	10	25.1	-35.1	106.7	10	07.8	-36.0	106.9	9	50.2	-36.8	107.1
9	10	43.5	-32.8	107.0	10	25.9	-33.7	107.2	10	08.0	-34.5	107.4	9	50.0	-35.3	107.6	9	31.8	-36.1	107.7	8	54.9	-37.7	108.0
10	10	10.7	-32.9	107.9	9	52.2	-33.7	108.1	9	33.5	-34.5	108.2	9	14.7	-35.4	108.4	8	55.7	-36.2	108.5	8	17.2	-37.7	108.8
11	9	37.8	-33.0	108.8	8	18.5	-33.9	108.9	8	59.0	-34.7	109.1	8	39.3	-35.5	109.2	7	59.5	-37.1	109.5	7	39.5	-37.9	109.6
12	9	04.8	-33.2	109.6	8	44.6	-34.0	109.7	8	24.3	-34.8	109.9	8	03.8	-35.6	110.0	7	43.2	-36.4	110.2	7	22.4	-37.1	110.3
13	8	31.6	-33.2	110.4	8	10.6	-34.1	110.6	7	49.5	-34.9	110.7	7	28.2	-35.7	110.8	7	06.8	-36.5	111.0	6	45.3	-37.3	111.1
14	7	58.4	-33.4	111.3	7	36.5	-34.1	111.4	7	14.6	-35.0	111.5	6	52.5	-35.8	111.6	6	30.3	-36.5	111.8	5	45.6	-38.0	112.0
15	7	25.0	-33.4	112.1	7	02.4	-34.3	112.2	6	39.6	-35.1	112.3	6	16.7	-35.8	112.5	5	53.8	-36.6	112.6	5	07.6	-38.1	112.7
16	6	51.6	-33.6	113.0	6	28.1	-34.3	113.1	6	04.5	-35.1	113.2	5	40.9	-35.9	113.3	5	17.2	-36.7	113.3	4	29.5	-38.2	113.5
17	6	18.0	-33.6	113.8	5	53.8	-34.5	113.9	5	29.4	-35.2	114.0	5	05.0	-36.0	114.1	4	40.5	-36.7	114.1	4	15.9	-37.5	114.2
18	5	44.4	-33.7	114.6	5	19.3	-34.4	114.7	4	54.2	-35.2	114.8	4	29.0	-36.0	114.9	4	03.8	-36.8	114.9	3	38.4	-37.5	115.0
19	5	10.7	-33.4	115.5	4	44.9	-34.6	115.5	4	19.0	-35.3	115.6	3	53.0	-36.1	115.7	3	27.0	-36.8	115.7	3	00.9	-37.5	115.8
20	4	36.9	-33.8	116.3	4	10.3	-34.6	116.4	3	43.7	-35.4	116.4	3	16.9	-36.1	116.5	2	50.2	-36.9	116.5	1	56.5	-38.3	116.6
21	4	03.1	-33.9	117.1	3	35.7	-34.6	117.2	3	08.3	-35.4	117.2	2	40.8	-36.1	117.3	2	13.3	-36.8	117.3	1	18.2	-38.3	117.4
22	3	29.2	-33.9	117.9	3	01.1	-34.7	118.0	2	32.9	-35.4	118.0	2	04.7	-36.2	118.1	1	36.5	-36.9	118.1	0	39.9	-38.3	118.1
23	2	55.3	-33.9	118.8	2	26.4	-34.7	118.8	1	57.5	-35.4	118.8	1	28.5	-36.1	118.9	0	59.6	-36.9	118.9	0	0.1	-38.3	118.9
24	2	21.4	-34.0	119.6	1	51.7	-34.7	119.6	1	22.1	-35.5	119.6	0	52.4	-36.2	119.7	0	22.7	-36.9	119.7	0	0.7	-37.7	120.5
25	1	47.4	-34.0	120.4	1	17.0	-34.7	120.4	0	46.6	-35.5	120.5	0	16.2	-36.2	120.5	0	14.2	-36.9	120.5	1	15.1	-38.3	120.5
26	1	13.4	-34.0	121.2	0	42.3	-34.8	121.3	0	11.1	-35.4	121.3	0	20.0	-36.2	120.5	0	51.1	-36.9	120.5	1	53.4	-38.2	120.5
27	0	39.4	-34.1	122.1	0	0.75	-34.7	122.1	0	24.3	+35.5	57.9	0	56.2	+36.2	57.9	1	28.0	+36.9	58.0	5	59.7	+37.5	58.0
28	0	05.3	-34.0	122.9	0	27.2	+34.8	57.1	1	02.0	+34.7	56.3	1	35.3	+35.4	56.3	2	08.5	+36.2	56.3	2	41.8	+36.8	56.4
29	0	28.7	+34.0	56.3	1	02.0	+34.7	56.3	1	29.4	+34.5	51.4	1	07.3	+35.2	51.5	1	22.0	+36.5	51.6	6	59.2	+37.1	51.7
30	1	02.7	+34.0	55.5	1	36.7	+34.7	55.5	2	10.7	+35.4	55.5	2	44.7	+36.1	55.5	3	18.6	+36.8	55.6	3	52.5	+37.4	55.6
31	1	36.7	+34.0	54.6	2	11.4	+34.7	54.7	2	46.1	+35.4	54.7	3	20.8	+36.0	54.7	3	55.4	+36.7	54.8	4	29.9	+37.4	54.9
32	2	10.7	+34.0	53.8	2	46.1	+34.7	53.9	3	21.5	+35.3	53.9	3	56.8	+36.0	53.9	4	32.1	+36.7	54.0	5	07.3	+37.4	54.1
33	2	24.4	+33.9	53.0	3	20.8	+34.6	53.0	3	56.8	+35.3	53.1	4	32.8	+36.0	53.1	5	08.8	+36.6	53.2	5	44.7	+37.3	53.3
34	3	18.6	+33.9	52.2	3	55.4	+34.5	52.2	4	32.1	+35.2	52.3	5	08.8	+35.9	52.3	6	45.4	+36.6	52.4	6	22.0	+37.2	52.5
35	3	52.5	+33.8	51.3	4	29.4	+34.5	51.4	5	07.3	+35.2	51.5	5	44.7	+35.8	51.5	6	22.0	+36.5	51.6	6	59.2	+37.1	51.7
36	4	26.3	+33.8	50.5	5	04.4	+34.5	50.6	5	42.5	+35.1	50.6	6	20.5	+35.8	50.7	6	58.5	+36.4	50.8	7	33.2	+37.0	50.8
37	5	00.1	+33.7	49.7	5	38.9	+34.4	49.8	6	17.6	+35.0	49.8	6	56.3	+35.7	49.9	7	34.9	+36.3	50.0	8	13.4	+36.6	50.0
38	5	33.8	+33.6	48.9	6	13.3	+34.3	48.9	6	52.6	+35.0	49.0	7	32.0	+35.5	49.1	8	11.2	+36.2	49.2	9	29.4	+37.5	49.5
39	6	07.4	+33.6	48.0	6	47.6	+34.2	48.1	7	27.6	+34.8	48.2	8	07.5	+35.5	48.3	8	47.4	+36.1	48.4	10	06.9	+37.4	48.7
40	6	41.0	+33.5	47.2	7	21.8	+34.1	47.3	8	02.4	+34.8	47.4	8	43.0	+35.4	47.5	9	23.5	+36.0	47.6	10	44.3	+37.2	47.9
41	7	14.5	+33.4	46.3	7	55.9	+34.0	46.4	8	37.2	+34.6	46.5	9	18.4	+35.3	46.7	9	59.5	+35.9	46.8	10	40.6	+36.5	46.9
42	7	47.9	+33.3	45.5	8	29.9	+33.9	45.6	9	11.8	+34.6	45.7	9	53.7	+35.1	45.8	10	35.4	+35.8	46.0	11	21.5	+37.1	47.1
43	8	21.2	+33.2	44.7	9	03.8	+33.8	44.8	9	46.4	+34.4	44.9	10	28.8	+35.1	45.0	11	11.2	+35.6	45.2	11	53.5	+36.2	45.3
44	8	54.4	+33.1	43.8	9	37.6	+33.7	43.9	10	20.8	+34.3	44.1	11	03.9	+34.9	44.2	11	46.8	+35.5	44.3	12	29.7	+36.1	44.6
45	9	27.5	+32.9	43.0	10	11.3	+33.6	43.1	10	55.1	+34.1	43.2	11	38.8	+34.7	43.4	12	22.3	+35.4	43.5	13	03.8	+35.6	43.7
46	10	00.4	+32.8	42.1	10	44.9	+33.4	42.3	11	29.2	+34.0	42.4	12	13.5	+34.6	42.5	12	57.7	+35.1	42.7	13	41.7	+35.8	42.8
47	10	33.2	+32.7	41.3	11	18.3	+33.3	41.4	12	03.2	+33.9	41.5	12	48.1	+34.4	41.7	13	32.8	+35.1	41.8	14	17.5	+35.8	42.0
48	11	05.9	+32.6	40.4	11	51.6	+33.1	40.6	12	37.1	+33.7	40.7	12	22.5	+34.3	40.9	14	07.9	+34.8	41.0	14	53.1	+35.4	41.2
49	11	38.5	+32.4	39.6	12	24.7	+32.9	39.7	13	10.8	+33.5	39.9	13	56.8	+34.1	40.0	14	42.7	+34.7	40.2	15	28.5	+35.2	40.3
50	12	10.9	+32.2	38.7	12	57.6	+32.8	38.9	13	44.3	+33.4	39.0	14	30.9	+33.9	39.2	15	17.4	+34.4	39.3	16	03.7	+35.0	39.5
51	12	43.1	+32.1	37.8	13	30.4	+32.6	38.0	14	17.7	+33.1	38.1	15	04.8	+33.7	38.3	15	51.8	+34.3	38.5	16	38.7	+37.0	38.7
52	13	15.2	+31.8	37.0	14	03.0	+32.5	37.1	14	50.8	+33.0	37.3	15	3										

S. Lat. { L.H.A. greater than 180° Zn= $180^{\circ}-Z$
 { L.H.A. less than 180°Zn= $180^{\circ}+Z$

LATITUDE SAME NAME AS DECLINATION

L.H.A. 108° , 252°

73°, 287° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.															
0	14 40.0 +30.9	98.7		14 30.8 +31.8	98.9		14 21.4 +32.7	99.2		14 11.6 +33.6	99.5		14 01.6 +34.5	99.7		13 51.4 +35.4	99.9		13 40.9 +36.2	100.2		13 30.2 +37.0	100.4		0
1	15 10.9 +30.7	97.8		15 02.6 +31.7	98.1		14 54.1 +32.5	98.3		14 45.2 +33.5	98.6		14 36.1 +34.4	98.9		14 26.8 +35.2	99.1		14 17.1 +36.1	99.4		14 07.2 +36.9	99.6		1
2	15 41.6 +30.5	96.9		15 34.3 +31.4	97.2		15 26.6 +32.3	97.5		15 18.7 +33.2	97.7		15 10.5 +34.1	98.0		15 02.0 +35.0	98.3		14 53.2 +35.8	98.5		14 44.1 +36.8	98.8		2
3	16 12.1 +30.3	96.0		16 05.7 +31.2	96.3		15 58.9 +32.1	96.6		15 51.9 +33.0	96.9		15 44.6 +33.9	97.2		15 37.0 +34.8	97.4		15 29.0 +35.7	97.7		15 20.9 +36.5	98.0		3
4	16 42.4 +30.0	95.1		16 36.9 +30.9	95.4		16 31.0 +31.9	95.7		16 24.9 +32.8	96.0		16 18.5 +33.7	96.3		16 11.8 +34.6	96.6		16 04.7 +35.5	96.9		15 57.4 +36.4	97.2		4
5	17 12.4 +29.8	94.2		17 07.8 +30.7	94.5		17 02.9 +31.7	94.8		16 57.7 +32.6	95.1		16 52.2 +33.5	95.4		16 46.4 +34.4	95.7		16 40.2 +35.3	96.0		16 33.8 +36.1	96.3		5
6	17 42.2 +29.5	93.3		17 38.5 +30.5	93.6		17 34.6 +31.4	93.9		17 30.3 +32.4	94.3		17 25.7 +33.3	94.6		17 20.8 +34.1	94.9		17 15.5 +35.1	95.2		17 09.9 +36.0	95.5		6
7	18 11.7 +29.3	92.4		18 09.0 +30.2	92.7		18 06.0 +31.2	93.0		18 02.7 +32.1	93.4		17 59.0 +33.0	93.7		17 54.9 +34.0	94.0		17 50.6 +34.8	94.3		17 45.9 +35.7	94.7		7
8	18 41.0 +28.9	91.5		18 39.2 +30.0	91.8		18 37.2 +30.9	92.1		18 34.8 +31.8	92.5		18 32.0 +32.8	92.8		18 28.9 +33.7	93.1		18 25.4 +34.6	93.5		18 21.6 +35.5	93.8		8
9	19 09.9 +28.8	90.5		19 09.2 +29.7	90.9		19 08.1 +30.6	91.2		19 06.6 +31.6	91.6		19 04.8 +32.5	91.9		19 02.6 +33.4	92.3		19 00.0 +34.4	92.6		18 57.1 +35.3	93.0		9
10	19 38.7 +28.4	89.6		19 38.9 +29.4	90.0		19 38.7 +30.4	90.3		19 38.2 +31.3	90.7		19 37.3 +32.3	91.0		19 36.0 +33.2	91.4		19 34.4 +34.1	91.7		19 32.4 +35.0	92.1		10
11	20 07.1 +28.1	88.7		20 08.3 +29.1	89.0		20 09.1 +30.1	89.4		20 09.5 +31.1	89.8		20 09.6 +32.0	90.1		20 09.2 +33.0	90.5		20 08.5 +33.9	90.9		20 07.4 +34.8	91.2		11
12	20 35.2 +27.8	87.7		20 37.4 +28.8	88.1		20 39.2 +29.7	88.5		20 40.6 +30.7	88.9		20 41.6 +31.7	89.2		20 42.2 +32.6	89.6		20 42.4 +33.5	90.0		20 42.2 +34.5	90.4		12
13	21 03.0 +27.5	86.8		21 06.2 +28.5	87.2		21 08.9 +29.5	87.6		21 11.3 +30.5	87.9		21 13.3 +31.4	88.3		21 14.8 +32.4	88.7		21 15.9 +33.4	89.1		21 16.7 +34.2	89.5		13
14	21 30.5 +27.2	85.8		21 34.7 +28.1	86.2		21 38.4 +29.2	86.6		21 41.8 +30.1	87.0		21 44.7 +31.1	87.4		21 47.2 +32.0	87.8		21 49.3 +33.0	88.2		21 50.9 +34.0	88.6		14
15	21 57.7 +26.8	84.9		22 02.8 +27.9	85.3		22 07.6 +28.8	85.7		22 11.9 +29.8	86.1		22 15.8 +30.8	86.5		22 19.2 +31.8	86.9		22 22.3 +32.7	87.3		22 24.9 +33.6	87.7		15
16	22 24.5 +26.5	83.9		22 30.7 +27.5	84.3		22 36.4 +28.5	84.7		22 41.7 +29.5	85.1		22 46.6 +30.4	85.6		22 51.0 +31.4	86.0		22 55.0 +32.4	86.4		22 58.5 +33.4	86.8		16
17	22 51.0 +26.1	82.9		22 58.2 +27.1	83.4		23 04.9 +28.2	83.8		23 11.2 +29.1	84.2		23 17.0 +30.2	84.6		23 22.4 +31.1	85.1		23 27.4 +32.1	85.5		23 31.9 +33.0	85.9		17
18	23 17.1 +25.8	82.0		23 25.3 +26.8	82.4		23 33.1 +27.7	82.8		23 40.3 +28.8	83.2		23 47.2 +29.8	83.7		23 53.5 +30.8	84.1		23 59.5 +31.7	84.6		24 04.9 +32.7	85.0		18
19	23 42.9 +25.4	81.0		23 52.1 +26.4	81.4		24 00.8 +27.5	81.8		24 09.1 +28.5	82.3		24 17.0 +29.4	82.7		24 24.3 +30.4	83.2		24 31.2 +31.4	83.6		24 37.6 +32.4	84.1		19
20	24 08.3 +25.0	80.0		24 18.5 +26.0	80.4		24 28.3 +27.0	80.9		24 37.6 +28.0	81.3		24 46.4 +29.0	81.8		24 54.7 +30.1	82.2		25 02.6 +31.0	82.7		25 10.0 +32.0	83.2		20
21	24 33.3 +24.6	79.0		24 44.5 +25.7	79.4		24 55.3 +26.7	79.9		25 05.6 +27.7	80.3		25 15.4 +28.7	80.8		25 24.8 +29.7	81.3		25 33.6 +30.7	81.7		25 42.0 +31.7	82.2		21
22	24 57.9 +24.2	78.0		25 10.2 +25.2	78.4		25 22.0 +26.2	78.9		25 33.3 +27.3	79.4		25 44.1 +28.3	79.8		25 54.5 +29.3	80.3		26 04.3 +30.3	80.8		26 13.7 +31.2	81.3		22
23	25 22.1 +23.8	77.0		25 35.4 +24.8	77.4		25 48.2 +25.9	77.9		26 00.6 +26.8	78.4		26 12.4 +27.9	78.9		26 23.8 +28.9	79.3		26 34.6 +29.9	79.8		26 44.9 +30.9	80.3		23
24	25 45.9 +23.3	75.9		26 00.2 +22.4	76.4		26 14.1 +25.4	76.9		26 27.4 +26.5	77.4		26 40.3 +27.5	77.9		26 52.7 +28.4	78.4		27 04.5 +29.5	78.9		27 15.8 +30.5	79.4		24
25	26 09.2 +23.0	74.9		26 24.6 +24.0	75.4		26 39.5 +25.0	75.9		26 53.9 +26.0	76.4		27 07.8 +27.0	76.9		27 21.1 +28.1	77.4		27 34.0 +29.1	77.9		27 46.3 +30.1	78.4		25
26	26 32.2 +22.4	73.9		26 48.6 +23.5	74.4		27 04.5 +24.5	74.9		27 19.9 +25.6	75.4		27 34.8 +26.6	75.9		27 49.2 +27.6	76.4		28 03.1 +28.6	76.9		28 16.4 +29.7	77.4		26
27	26 54.6 +22.0	72.9		27 12.1 +23.0	73.3		27 29.0 +24.1	73.8		27 45.5 +25.1	74.3		28 01.4 +26.2	74.9		28 16.8 +27.2	75.4		28 31.7 +28.2	75.9		28 46.1 +29.2	76.4		27
28	27 16.6 +21.6	71.8		27 35.1 +22.6	72.3		27 53.1 +23.6	72.8		28 10.6 +24.7	73.3		28 27.6 +25.7	73.8		28 44.0 +26.8	74.4		28 59.9 +27.8	74.9		29 15.3 +28.8	75.4		28
29	27 38.2 +21.0	70.8		27 57.7 +22.1	71.3		28 16.7 +23.2	71.8		28 35.3 +24.2	72.3		28 53.3 +25.2	72.8		29 10.8 +26.2	73.3		29 27.7 +27.3	73.9		29 44.1 +28.3	74.4		29
30	27 59.2 +20.6	69.7		28 19.8 +21.6	70.2		28 39.9 +22.7	70.7		28 59.5 +23.7	71.2		29 18.5 +24.7	71.8		29 37.0 +25.8	72.3		29 55.0 +26.8	72.8		30 12.4 +27.8	73.4		30
31	28 19.8 +20.1	68.6		28 41.4 +21.2	69.1		29 02.6 +22.1	69.7		29 23.2 +23.2	70.2		29 43.2 +24.3	70.7		30 02.8 +25.3	71.3		30 21.8 +26.3	71.8		30 40.2 +27.4	72.4		31
32	28 39.9 +19.6	67.6		29 02.6 +20.6	68.1		29 24.7 +21.7	68.6		29 46.4 +22.6	69.1		30 07.5 +23.7	69.7		30 28.1 +24.7	70.2		30 48.1 +25.8	70.8		31 07.6 +26.8	71.3		32
33	28 59.5 +19.0	66.5		29 23.2 +20.0	67.0		29 46.4 +21.1	67.5		30 09.0 +22.2	68.0		30 31.2 +23.2	68.6		30 52.8 +24.3	69.1		31 13.9 +25.3	69.7		31 34.4 +26.4	70.3		33
34	29 18.5 +18.5	65.4		29 43.2 +19.6	65.9		30 07.5 +20.6	66.4		30 31.2 +21.7	67.1		30 54.4 +22.7	67.6		31 17.1 +23.7	68.1		31 39.2 +24.8	68.6		32 00.8 +25.8	69.2		34
35	29 37.0 +18.0	64.3		30 02.8 +19.0	64.8		30 28.1 +20.0	65.3		30 52.8 +21.1	65.9		31 17.1 +22.1	66.4		31 40.8 +23.2	67.0		32 04.0 +24.2	67.6		32 26.6 +25.2	68.2		35
36	29 55.0 +17.4	63.2		30 21.8 +18.4	63.7		30 48.1 +19.5	64.3		31 13.9 +20.5	64.8		31 39.2 +21.6	65.4		32 04.0 +22.6	65.9		32 28.2 +23.6	66.5		32 51.8 +24.7	67.1		36
37	30 12.4 +16.9	62.1		30 40.2 +17.9	62.6		31 07.6 +18.9	63.1		31 34.4 +19.5	63.7		32 00.8 +21.0	64.3		32 26.6 +22.0	64.8	</							

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 73° , 287°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	14 40.0	-31.1	98.7	14 30.8	-32.0	98.9	14 21.4	-33.0	99.2	14 11.6	-33.8	99.5	14 01.6	-34.6	99.7	13 51.4	-35.5	99.9	13 40.9	-36.4	100.2	13 30.2	-37.2	100.4	0
1	14 08.9	-31.3	99.6	13 58.8	-32.2	99.8	13 48.4	-33.0	100.1	13 37.8	-33.9	100.3	13 27.0	-34.9	100.5	13 15.9	-35.7	100.8	13 04.5	-36.5	101.0	12 53.0	-37.4	101.2	1
2	13 37.6	-31.5	100.5	13 26.6	-32.4	100.7	13 15.4	-33.3	100.9	13 03.9	-34.2	101.2	12 52.1	-34.9	101.4	12 40.2	-35.8	101.6	12 28.0	-36.7	101.8	12 15.6	-37.5	102.0	2
3	13 06.1	-31.6	101.3	12 54.2	-32.5	101.6	12 42.1	-33.4	101.8	12 29.7	-34.3	102.0	12 17.2	-35.2	102.2	12 04.4	-36.0	102.4	11 51.3	-36.4	102.6	11 38.1	-37.6	102.8	3
4	12 34.5	-31.9	102.2	12 21.7	-32.7	102.4	12 08.7	-33.6	102.6	11 55.4	-34.4	102.8	11 42.0	-35.3	103.0	11 28.4	-36.2	103.2	11 14.5	-36.9	103.4	11 00.5	-37.8	103.6	4
5	12 02.6	-32.0	103.1	11 49.0	-32.9	103.3	11 35.1	-33.7	103.5	11 21.0	-34.6	103.7	11 06.7	-35.4	103.9	10 52.2	-36.2	104.1	10 37.6	-37.1	104.2	10 22.7	-37.8	104.4	5
6	11 30.6	-32.1	103.9	11 16.1	-33.0	104.1	11 01.4	-33.9	104.3	10 46.4	-34.7	104.5	10 31.3	-35.5	104.7	10 16.0	-36.4	104.9	10 05.5	-37.2	105.0	9 44.9	-38.0	105.2	6
7	10 58.5	-32.3	104.8	10 43.1	-33.2	105.0	10 27.5	-34.0	105.2	10 11.7	-34.8	105.3	9 55.8	-35.7	105.5	9 39.6	-36.4	105.7	9 23.3	-37.2	105.8	9 06.9	-38.1	106.0	7
8	10 26.2	-32.4	105.6	10 09.9	-33.2	105.8	9 53.5	-34.1	106.0	9 36.9	-35.0	106.2	9 20.1	-35.8	106.3	9 03.2	-36.6	106.5	8 46.1	-37.4	106.6	8 28.8	-38.2	106.8	8
9	9 53.8	-32.6	106.5	9 36.7	-33.4	106.7	9 19.4	-34.3	106.8	9 01.9	-35.1	107.0	8 44.3	-35.9	107.1	8 26.6	-36.7	107.3	8 08.7	-37.5	107.4	7 50.6	-38.2	107.6	9
10	9 21.2	-32.6	107.4	9 03.3	-33.6	107.5	8 45.1	-34.3	107.7	8 26.8	-35.1	107.8	8 08.4	-35.9	107.9	7 49.9	-36.8	108.1	7 31.2	-37.6	108.2	7 12.4	-38.3	108.3	10
11	8 48.6	-32.8	108.2	8 29.7	-33.6	108.4	8 10.8	-34.5	108.5	7 51.7	-35.3	108.6	7 32.5	-36.1	108.8	7 13.1	-36.8	108.9	6 53.6	-37.6	109.0	6 34.1	-38.4	109.1	11
12	8 15.8	-32.9	109.1	7 56.1	-33.7	109.2	7 36.3	-34.5	109.3	7 16.4	-35.3	109.4	6 56.4	-36.2	109.6	6 36.3	-37.0	109.7	6 16.0	-37.7	109.8	5 55.7	-38.5	109.9	12
13	7 42.9	-33.0	109.9	7 22.4	-33.8	110.0	7 01.8	-34.6	110.1	6 41.1	-35.5	110.3	6 20.2	-36.2	110.4	5 59.3	-37.0	110.5	5 38.3	-37.8	110.6	5 17.2	-38.5	110.6	13
14	7 09.9	-33.1	110.7	6 48.6	-33.9	110.9	6 27.2	-34.8	111.0	6 05.6	-35.5	111.1	5 44.0	-36.3	111.2	5 22.3	-37.0	111.3	5 00.5	-37.8	111.3	4 38.7	-38.6	111.4	14
15	6 36.8	-33.2	111.6	6 14.7	-34.0	111.7	5 52.4	-34.7	111.8	5 30.1	-35.5	111.9	5 07.7	-36.3	112.0	4 45.3	-37.2	112.1	4 00.1	-38.6	112.2	3 41.1	-39.4	112.3	15
16	6 03.6	-33.2	112.4	5 40.7	-34.1	112.5	5 17.7	-34.9	112.6	4 54.6	-35.7	112.7	4 31.4	-36.4	112.8	4 08.1	-37.1	112.8	3 44.8	-38.7	113.0	3 21.5	-38.7	113.0	16
17	5 30.4	-33.4	113.3	5 06.6	-34.1	113.3	4 42.8	-34.9	113.4	4 18.9	-35.6	113.5	3 55.0	-36.5	113.6	3 31.0	-37.2	113.6	3 06.9	-37.9	113.7	2 42.8	-38.7	113.7	17
18	4 57.0	-33.3	114.1	4 32.5	-34.1	114.2	4 07.9	-34.9	114.2	3 43.3	-35.8	114.3	3 18.5	-36.4	114.4	2 53.8	-37.2	114.4	2 04.1	-38.7	114.5	1 55.4	-38.6	114.5	18
19	4 23.7	-33.5	114.9	3 58.4	-34.3	115.0	3 33.0	-35.0	115.0	3 07.5	-35.7	115.1	2 42.1	-36.5	115.1	2 16.6	-37.3	115.2	1 51.0	-38.0	115.2	1 25.4	-38.7	115.2	19
20	3 50.2	-33.5	115.8	3 24.1	-34.2	115.8	2 58.0	-35.0	115.9	2 31.8	-35.8	115.9	2 05.6	-36.6	115.9	1 39.3	-37.3	116.0	1 13.0	-38.0	116.0	0 46.7	-38.7	116.0	20
21	3 16.7	-33.5	116.6	2 49.9	-34.3	116.6	2 23.0	-35.1	116.7	1 56.0	-35.8	116.7	1 29.0	-36.5	116.7	1 02.0	-37.3	116.8	0 35.0	-38.0	116.8	0 08.0	-38.8	116.8	21
22	2 43.2	-33.5	117.4	2 15.6	-34.4	117.5	1 47.9	-35.1	117.5	1 20.2	-35.8	117.5	0 52.5	-36.6	117.5	0 24.7	-37.3	117.5	0 03.0	+38.0	62.5	22			
23	2 09.7	-33.6	118.2	1 41.2	-34.3	118.3	1 12.8	-35.1	118.3	0 44.4	-35.9	118.3	0 15.9	-36.6	118.3	0 20.7	+36.5	60.9	0 49.9	+38.7	61.7	1 09.5	+38.7	61.7	23
24	1 36.1	-33.6	119.1	1 06.9	-34.4	119.1	0 37.7	-35.1	119.1	0 08.5	-35.8	119.1	0 27.3	+35.8	60.1	0 57.2	+36.6	60.1	1 27.1	+37.3	60.1	2 26.9	+38.7	60.2	25
25	1 02.5	-33.7	119.9	0 32.5	-34.3	119.9	0 02.6	-35.1	119.9	0 27.3	+35.8	60.1	0 57.2	+36.6	60.1	1 33.8	+36.5	59.3	2 04.4	+37.3	59.3	3 05.6	+38.6	59.4	26
26	0 28.8	-33.6	120.7	0 01.8	+34.4	59.3	0 32.5	+35.1	59.3	1 03.1	+35.9	59.3	0 20.7	+36.5	60.9	0 49.9	+38.7	60.9	1 19.0	+38.0	60.9	1 48.2	+38.7	60.9	24
27	0 04.8	+33.6	58.4	0 36.2	+34.3	58.4	1 07.6	+35.1	58.5	1 42.7	+35.0	57.6	2 14.8	+35.7	57.7	2 46.8	+36.5	57.7	3 18.9	+37.1	57.8	3 50.9	+38.7	57.8	27
28	0 38.4	+33.6	57.6	1 10.5	+34.4	57.6	1 42.7	+35.0	57.6	2 14.8	+35.7	57.7	2 46.8	+36.5	57.7	3 18.9	+37.1	57.8	4 22.8	+38.5	57.9	2 28.5	+38.7	57.9	28
29	1 12.0	+33.6	56.8	1 44.9	+34.3	56.8	2 17.7	+35.1	56.8	2 50.5	+35.8	56.9	3 23.3	+36.4	56.9	3 56.0	+37.2	57.0	4 28.7	+37.8	57.0	5 01.3	+38.5	57.1	29
30	1 45.6	+33.6	56.0	2 19.2	+34.3	56.0	2 52.8	+35.0	56.0	3 26.3	+35.7	56.1	3 59.7	+36.4	56.1	4 33.2	+37.0	56.2	5 06.5	+37.8	56.3	5 39.8	+38.5	56.3	30
31	2 19.2	+33.6	55.1	2 53.5	+34.3	55.2	3 27.8	+34.9	55.2	4 02.0	+35.6	55.3	4 36.1	+36.4	55.3	5 10.2	+37.1	55.4	5 44.3	+37.5	55.5	6 18.3	+38.3	55.6	31
32	2 52.8	+33.5	54.3	3 27.8	+34.2	54.3	4 02.7	+34.9	54.4	4 37.6	+35.6	54.5	5 12.5	+36.3	54.5	6 20.2	+37.6	54.7	6 56.6	+38.3	54.8	6 34.9	+38.2	54.0	33
33	3 26.3	+33.4	53.5	4 02.0	+34.1	53.5	4 37.6	+34.9	53.6	5 13.2	+35.6	53.6	5 48.8	+36.2	53.7	6 24.2	+36.9	53.8	6 59.6	+37.6	53.9	7 34.9	+38.2	54.0	34
34	3 59.7	+33.5	52.6	5 10.2	+34.1	52.7	5 12.5	+34.8	52.8	5 48.8	+35.4	52.8	6 25.0	+36.1	52.9	7 01.1	+36.8	53.0	7 37.2	+37.4	53.1	8 13.1	+38.1	53.2	34
35	4 33.2	+33.3	51.8	5 10.2	+34.1	51.9	5 47.3	+34.7	51.9	6 24.2	+35.4	52.0	7 01.1	+36.1	52.1	7 37.9	+36.7	52.2	8 14.6	+37.4	52.3	8 51.2	+38.1	52.4	35
36	5 06.5	+33.3	51.0	5 44.3	+34.0	51.0	6 22.0	+34.6	51.1	6 59.6	+35.3	51.2	7 37.2	+35.9	51.3	8 14.6	+36.6	51.4	8 52.0	+37.3	51.5	9 29.3	+37.9	51.7	36
37	5 39.8	+33.3	50.1	6 18.3	+33.9	50.2	6 56.6	+34.6	50.3	7 34.9	+35.2	50.4	8 13.1	+35.9	50.5	8 51.2	+36.6	50.6	9 29.3	+37.1	50.7	10 07.2	+37.8	50.9	37
38	6 13.1	+33.1	49.3																						

74°, 286° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° Zn=Z
 { L.H.A. less than 180° Zn= 360° -Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z									
	°	'	'	°	°	'	'	°	°	'	'	°	°	'	'	°	°	'	'	°	°	'	'	°									
0	13	48.6	+30.8	98.2	13	40.0	+31.7	98.4	13	31.1	+32.6	98.6	13	22.0	+33.5	98.9	13	12.6	+34.4	99.1	13	03.0	+35.2	99.3	12	53.1	+36.1	99.6	12	43.0	+37.0	99.8	0
1	14	19.4	+30.6	97.3	14	11.7	+31.5	97.5	14	03.7	+32.4	97.8	13	55.5	+33.3	98.0	13	47.0	+34.2	98.3	13	38.2	+35.1	98.5	13	29.2	+35.9	98.7	13	20.0	+36.7	99.0	1
2	14	50.0	+30.4	96.4	14	43.2	+31.3	96.6	14	36.1	+32.3	96.9	14	28.8	+33.1	97.2	14	21.2	+34.0	97.4	14	13.3	+34.9	97.7	14	05.1	+35.8	97.9	13	56.7	+36.7	98.2	2
3	15	20.4	+30.2	95.5	15	14.5	+31.1	95.8	15	08.4	+32.0	96.0	15	01.9	+33.0	96.3	15	55.2	+33.8	96.6	14	48.2	+34.7	96.8	14	40.9	+35.6	97.1	14	33.4	+36.4	97.4	3
4	15	50.6	+29.9	94.6	15	45.6	+30.9	94.9	15	40.4	+31.8	95.2	15	34.9	+32.7	95.4	15	29.0	+33.7	95.7	15	22.9	+34.5	96.0	15	16.5	+35.4	96.3	15	09.8	+36.3	96.5	4
5	16	20.5	+29.8	93.7	16	16.5	+30.7	94.0	16	12.2	+31.6	94.3	16	07.6	+32.5	94.6	16	02.7	+33.4	94.9	15	57.4	+34.4	95.1	15	51.9	+35.2	95.4	15	46.1	+36.1	95.7	5
6	16	50.3	+29.5	92.8	16	47.2	+30.4	93.1	16	43.8	+31.4	93.4	16	40.1	+32.3	93.7	16	36.1	+33.2	94.0	16	31.8	+34.1	94.3	16	27.1	+35.0	94.6	16	22.2	+35.9	94.9	6
7	17	19.8	+29.2	91.9	17	17.6	+30.2	92.2	17	15.2	+31.1	92.5	17	12.4	+32.1	92.8	17	09.3	+33.0	93.1	17	05.9	+33.9	93.4	17	02.1	+34.8	93.7	16	58.1	+35.7	94.0	7
8	17	49.0	+29.0	91.0	17	47.8	+30.0	91.3	17	46.3	+30.9	91.6	17	44.5	+31.8	91.9	17	42.3	+32.7	92.2	17	39.8	+33.7	92.6	17	36.9	+34.6	92.9	17	33.8	+35.4	93.2	8
9	18	18.0	+28.7	90.0	18	17.8	+29.6	90.4	18	17.2	+30.6	90.7	18	16.3	+31.6	91.0	18	15.0	+32.6	91.4	18	13.5	+33.4	91.7	18	11.5	+34.4	92.0	18	09.2	+35.3	92.3	9
10	18	46.7	+28.4	89.1	18	47.4	+29.5	89.5	18	47.8	+30.4	89.8	18	47.9	+31.3	90.1	18	47.6	+32.2	90.5	18	46.9	+33.2	90.8	18	45.9	+34.1	91.2	18	44.5	+35.0	91.5	10
11	19	15.1	+28.2	88.2	19	16.9	+29.1	88.5	19	18.2	+30.1	88.9	19	19.2	+31.1	89.2	19	19.8	+32.0	89.6	19	20.1	+32.9	89.9	19	20.0	+33.8	90.3	19	19.5	+34.7	90.6	11
12	19	43.3	+27.9	87.2	19	46.0	+28.8	87.6	19	48.3	+29.8	88.0	19	50.3	+30.7	88.3	19	51.8	+31.7	88.7	19	53.0	+32.7	89.0	19	53.8	+33.6	89.4	19	54.2	+34.6	89.8	12
13	20	11.2	+27.5	86.3	20	14.8	+28.6	86.7	20	18.1	+29.5	87.0	20	21.0	+30.5	87.4	20	23.5	+31.5	87.8	20	25.7	+32.4	88.2	20	27.4	+33.3	88.5	20	28.8	+34.2	88.9	13
14	20	38.7	+27.3	85.4	20	43.4	+28.2	85.7	20	47.6	+29.3	86.1	20	51.5	+30.2	86.5	20	55.0	+31.1	86.9	20	58.1	+32.1	87.3	21	00.7	+33.1	87.6	21	03.0	+34.0	88.0	14
15	21	06.0	+26.9	84.4	21	11.6	+27.9	84.8	21	16.9	+28.9	85.2	21	21.7	+29.9	85.6	21	26.1	+30.9	86.0	21	30.2	+31.8	86.3	21	33.8	+32.7	86.7	21	37.0	+33.7	87.1	15
16	21	32.9	+26.6	83.4	21	39.5	+27.6	83.8	21	45.8	+28.5	84.2	21	51.6	+29.6	84.6	21	57.0	+30.5	85.0	22	02.0	+31.5	85.4	22	06.5	+32.5	85.8	22	10.7	+33.4	86.2	16
17	21	59.5	+26.2	82.5	22	07.1	+27.3	82.9	22	14.3	+28.3	83.3	22	21.2	+29.2	83.7	22	27.5	+30.3	84.1	22	33.5	+31.2	84.5	22	39.0	+32.2	84.9	22	44.1	+33.1	85.3	17
18	22	25.7	+25.9	81.5	22	34.4	+26.9	81.9	22	42.6	+27.9	82.3	22	50.4	+28.9	82.7	22	57.8	+29.8	83.2	23	04.7	+30.8	83.6	23	11.2	+31.8	84.0	23	17.2	+32.8	84.4	18
19	22	51.6	+25.6	80.5	23	01.3	+26.5	80.9	23	10.5	+27.6	81.4	23	19.3	+28.5	81.8	23	27.6	+29.6	82.2	23	35.5	+30.6	82.7	23	43.0	+31.5	83.1	23	50.0	+32.4	83.5	19
20	23	17.2	+25.1	79.5	23	27.8	+26.2	80.0	23	38.1	+27.2	80.4	23	47.8	+28.2	80.8	23	57.2	+29.2	81.3	24	06.1	+30.1	81.7	24	14.5	+31.1	82.2	24	22.4	+32.2	82.6	20
21	23	42.3	+24.8	78.6	23	54.0	+25.8	79.0	24	05.3	+26.8	79.4	24	16.0	+27.9	79.9	24	26.4	+28.8	80.3	24	36.2	+29.8	80.8	24	45.6	+30.8	81.2	24	54.6	+31.7	81.7	21
22	24	07.1	+24.4	77.6	24	19.8	+25.5	78.0	24	32.1	+26.4	78.4	24	43.9	+27.4	78.9	24	55.2	+28.4	79.3	25	06.1	+29.4	79.8	25	16.4	+30.5	80.3	25	26.3	+31.4	80.7	22
23	24	31.5	+24.0	76.6	24	45.3	+25.0	77.0	24	58.5	+26.1	77.5	25	11.3	+27.1	77.9	25	23.6	+28.1	78.4	25	46.9	+30.0	79.3	25	57.7	+31.1	79.8	23				
24	24	55.5	+23.6	75.5	25	10.3	+24.6	76.0	25	24.6	+25.6	76.5	25	38.4	+26.6	76.9	25	51.7	+27.7	77.4	26	04.6	+28.6	77.9	26	28.8	+30.6	78.8	24				
25	25	19.1	+23.2	74.5	25	34.9	+24.2	75.0	25	50.2	+25.2	75.5	26	05.0	+26.3	75.9	26	19.4	+27.2	76.4	26	33.2	+28.3	76.9	26	46.6	+29.3	77.4	26	59.4	+30.3	77.9	25
26	25	42.3	+22.7	73.5	25	59.1	+23.8	74.0	26	15.4	+24.8	74.4	26	31.3	+25.8	74.9	26	46.6	+26.9	75.4	27	01.5	+27.8	75.9	27	15.9	+28.8	76.4	27	29.7	+29.7	76.9	26
27	26	05.0	+22.3	72.5	26	22.9	+23.3	73.0	26	40.2	+24.4	73.4	26	57.1	+25.4	73.9	27	13.5	+26.4	74.4	27	29.3	+27.5	74.9	27	44.7	+28.4	75.4	27	59.6	+29.4	75.9	27
28	26	27.3	+21.9	71.4	26	46.2	+22.9	71.9	27	04.6	+23.9	72.4	27	22.5	+24.9	72.9	27	39.9	+25.9	73.4	27	56.8	+26.9	73.9	28	13.1	+28.0	74.4	28	29.0	+29.0	74.9	28
29	26	49.2	+21.4	70.4	27	09.1	+22.4	70.9	27	28.5	+23.4	71.4	27	47.4	+24.5	71.9	27	05.8	+25.5	72.4	28	41.1	+27.6	73.4	28	50.8	+28.5	73.9	29				
30	27	10.6	+20.9	69.4	27	31.5	+21.9	69.8	27	51.9	+23.0	70.3	28	11.9	+24.0	70.8	28	31.3	+25.0	71.3	28	50.3	+26.0	71.9	29	08.7	+27.0	72.4	29	26.5	+28.1	72.9	30
31	27	31.5	+20.4	68.3	27	53.4	+21.5	68.8	28	14.9	+22.5	69.3	28	35.9	+23.5	69.8	28	56.3	+24.6	70.3	29	35.7	+26.6	71.4	29	54.6	+27.7	71.9	31				
32	27	51.9	+20.0	67.2	28	14.9	+21.0	67.7	28	37.4	+22.0	68.2	29	20.9	+24.1	68.7	29	40.9	+24.1	69.3	30	02.3	+26.2	70.3	30	22.3	+27.1	70.9	32				
33	28	11.9	+19.4	66.2	28	35.9	+20.4	66.7	28	59.4	+21.5	67.2	29	22.4	+22.6	67.7	29	45.0	+23.5	68.2	30	07.0	+24.6	68.7	30	28.5	+25.6	69.3	30				
34	28	31.3	+19.0	65.1	28	56.3	+20.8	65.6	29	02.9	+19.5	65.1	30	32.6	+21.5	65.5	30	31.6	+22.5	66.1	31	43.7	+24.1	66.1	32	07.8	+28.0	66.7	32				
35	28	50.3	+18.4	64.0	29	16.3	+19.4	64.5	29	41.9	+20.4	65.0	30	07.0	+21.5	65.5	30	31.6	+22.5	66.1	31	43.7	+24.1	66.1	32	07.8	+28.0	66.7	36				
36	28	08.7	+17.8	62.9	29	35.7	+18.9	63.4	30	02.3	+20.0	63.9	30	28.5	+20.9	64.5	30	54.1	+21.9	65.0	31	19.2	+23.0	65.6	31	43.7	+24.1	66.1	36				
37	29	26.5	+17.4	61.8	29	54.6	+18.4	62.3	30	22.3	+19.3	62.8	30	49.4	+20.4	63.4	31	16.0	+21.4	63.9	31	42.2	+22.4	64.5	32	07.8	+23.4	65.0	32				
38	29	43.9	+16.8	60.7	30	13.0	+17.8	61.2	30	41.6	+18.8	61.8	31	09.8	+19.8	62.3	31	37.4	+20.9	62.8	32	04.6	+21.9	63.4	32	57.3	+23.9	64.5	38				
39	30	0.7																															

74°, 286° L.H.A.

LATITUDE SAME NAME AS DECLINATION

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 74°, 286°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.									
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z										
0	13 48.6 -31.0	98.2	13 40.0 -31.9	98.4	13 31.1 -32.8	98.6	13 22.0 -33.7	98.9	13 12.6 -34.6	99.1	13 03.0 -35.4	99.3	12 53.1 -36.3	99.6	12 43.0 -37.1	99.8	0	13 48.6 -31.0	98.2	13 40.0 -31.9	98.4	13 31.1 -32.8	98.6	13 22.0 -33.7	98.9	13 12.6 -34.6	99.1	13 03.0 -35.4	99.3	12 53.1 -36.3	99.6	12 43.0 -37.1	99.8	0
1	13 17.6 -31.1	99.0	13 08.1 -32.1	99.3	12 58.3 -33.0	99.5	12 48.3 -33.9	99.7	12 38.0 -34.7	99.9	12 27.6 -35.6	100.2	12 16.8 -36.3	100.4	12 05.9 -37.2	100.6	1	13 17.6 -31.1	99.0	13 08.1 -32.1	99.3	12 58.3 -33.0	99.5	12 48.3 -33.9	99.7	12 38.0 -34.7	99.9	12 27.6 -35.6	100.2	12 16.8 -36.3	100.4	12 05.9 -37.2	100.6	1
2	12 46.5 -31.4	99.9	12 36.0 -32.2	100.1	12 25.3 -33.1	100.4	12 14.4 -33.9	100.6	12 03.3 -34.8	100.8	11 52.0 -35.7	101.0	11 40.5 -36.6	101.2	11 28.7 -37.4	101.4	2	12 46.5 -31.4	99.9	12 36.0 -32.2	100.1	12 25.3 -33.1	100.4	12 14.4 -33.9	100.6	12 03.3 -34.8	100.8	11 52.0 -35.7	101.0	11 40.5 -36.6	101.2	11 28.7 -37.4	101.4	2
3	12 15.1 -31.5	100.8	12 03.8 -32.4	101.0	11 52.2 -33.2	101.2	11 40.5 -34.2	101.4	11 28.5 -35.0	101.6	11 16.3 -35.8	101.8	11 03.9 -36.6	102.0	10 51.3 -37.4	102.2	3	12 15.1 -31.5	100.8	12 03.8 -32.4	101.0	11 52.2 -33.2	101.2	11 40.5 -34.2	101.4	11 28.5 -35.0	101.6	11 16.3 -35.8	101.8	11 03.9 -36.6	102.0	10 51.3 -37.4	102.2	3
4	11 43.6 -31.6	101.7	11 31.4 -32.6	101.9	11 19.0 -33.5	102.1	11 06.3 -34.3	102.3	10 53.5 -35.1	102.4	10 40.5 -36.0	102.6	10 27.3 -36.8	102.8	10 13.9 -37.6	103.0	4	11 43.6 -31.6	101.7	11 31.4 -32.6	101.9	11 19.0 -33.5	102.1	11 06.3 -34.3	102.3	10 53.5 -35.1	102.4	10 40.5 -36.0	102.6	10 27.3 -36.8	102.8	10 13.9 -37.6	103.0	4
5	11 12.0 -31.9	102.5	10 58.8 -32.6	102.7	10 45.5 -33.5	102.9	10 32.0 -34.4	103.1	10 18.4 -35.3	103.3	10 04.5 -36.1	103.4	9 50.5 -36.9	103.6	9 36.3 -37.7	103.8	5	11 12.0 -31.9	102.5	10 58.8 -32.6	102.7	10 45.5 -33.5	102.9	10 32.0 -34.4	103.1	10 18.4 -35.3	103.3	10 04.5 -36.1	103.4	9 50.5 -36.9	103.6	9 36.3 -37.7	103.8	5
6	10 40.1 -31.9	103.4	10 26.2 -32.9	103.6	10 12.0 -33.7	103.7	9 57.6 -34.5	103.9	9 43.1 -35.3	104.1	9 28.4 -36.2	104.3	9 13.6 -37.0	104.4	8 58.6 -37.8	104.6	6	10 40.1 -31.9	103.4	10 26.2 -32.9	103.6	10 12.0 -33.7	103.7	9 57.6 -34.5	103.9	9 43.1 -35.3	104.1	9 28.4 -36.2	104.3	9 13.6 -37.0	104.4	8 58.6 -37.8	104.6	6
7	10 08.2 -32.1	104.3	9 53.3 -32.9	104.4	9 38.3 -33.8	104.6	9 23.1 -34.6	104.8	9 07.8 -35.5	104.9	8 52.2 -36.3	105.1	8 36.6 -37.1	105.2	8 20.8 -37.9	105.4	7	10 08.2 -32.1	104.3	9 53.3 -32.9	104.4	9 38.3 -33.8	104.6	9 23.1 -34.6	104.8	9 07.8 -35.5	104.9	8 52.2 -36.3	105.1	8 36.6 -37.1	105.2	8 20.8 -37.9	105.4	7
8	9 36.1 -32.2	105.1	9 20.4 -33.1	105.3	9 04.5 -33.9	105.4	8 48.5 -34.8	105.6	8 32.3 -35.6	105.7	8 15.9 -36.3	105.9	7 59.5 -37.2	106.0	7 42.9 -38.0	106.1	8	9 36.1 -32.2	105.1	9 20.4 -33.1	105.3	9 04.5 -33.9	105.4	8 48.5 -34.8	105.6	8 32.3 -35.6	105.7	8 15.9 -36.3	105.9	7 59.5 -37.2	106.0	7 42.9 -38.0	106.1	8
9	9 03.9 -32.3	106.0	8 47.3 -33.2	106.1	8 30.6 -34.0	106.3	8 13.7 -34.8	106.4	7 56.7 -35.7	106.5	7 39.6 -36.5	106.7	7 22.3 -37.3	106.8	7 04.9 -38.1	106.9	9	9 03.9 -32.3	106.0	8 47.3 -33.2	106.1	8 30.6 -34.0	106.3	8 13.7 -34.8	106.4	7 56.7 -35.7	106.5	7 39.6 -36.5	106.7	7 22.3 -37.3	106.8	7 04.9 -38.1	106.9	9
10	8 31.6 -32.5	106.8	8 14.1 -33.3	107.0	7 56.6 -34.2	107.1	7 38.9 -35.0	107.2	7 21.0 -35.7	107.3	7 03.1 -36.6	107.5	6 45.0 -37.3	107.6	6 26.8 -38.1	107.7	10	8 31.6 -32.5	106.8	8 14.1 -33.3	107.0	7 56.6 -34.2	107.1	7 38.9 -35.0	107.2	7 21.0 -35.7	107.3	7 03.1 -36.6	107.5	6 45.0 -37.3	107.6	6 26.8 -38.1	107.7	10
11	7 59.1 -32.5	107.7	7 40.8 -33.3	107.8	7 22.4 -34.2	107.9	7 03.9 -35.0	108.0	6 45.3 -35.9	108.2	6 26.5 -36.8	108.3	6 07.7 -37.5	108.4	5 48.7 -38.2	108.5	11	7 59.1 -32.5	107.7	7 40.8 -33.3	107.8	7 22.4 -34.2	107.9	7 03.9 -35.0	108.0	6 45.3 -35.9	108.2	6 26.5 -36.8	108.3	6 07.7 -37.5	108.4	5 48.7 -38.2	108.5	11
12	7 26.6 -32.7	108.5	7 07.5 -33.5	108.6	6 48.2 -34.3	108.8	6 28.9 -35.1	108.9	6 09.4 -35.9	109.0	5 49.9 -36.7	109.1	5 10.5 -38.2	109.2	5 10.5 -38.2	109.2	12	7 26.6 -32.7	108.5	7 07.5 -33.5	108.6	6 48.2 -34.3	108.8	6 28.9 -35.1	108.9	6 09.4 -35.9	109.0	5 49.9 -36.7	109.1	5 10.5 -38.2	109.2	5 10.5 -38.2	109.2	12
13	6 53.9 -32.7	109.4	6 34.0 -33.6	109.5	6 13.9 -34.3	109.6	5 53.8 -35.2	109.7	5 33.5 -36.0	109.8	5 13.2 -36.8	109.9	4 52.8 -37.6	110.9	4 52.8 -37.6	110.9	13	6 53.9 -32.7	109.4	6 34.0 -33.6	109.5	6 13.9 -34.3	109.6	5 53.8 -35.2	109.7	5 33.5 -36.0	109.8	5 13.2 -36.8	109.9	4 52.8 -37.6	110.9	4 52.8 -37.6	110.9	13
14	6 21.2 -32.8	110.2	6 00.4 -33.6	110.3	5 39.6 -34.5	110.4	5 18.6 -35.3	110.5	4 57.5 -36.0	110.6	4 36.4 -38.8	110.7	4 15.2 -37.6	110.7	3 54.0 -38.4	110.8	14	6 21.2 -32.8	110.2	6 00.4 -33.6	110.3	5 39.6 -34.5	110.4	5 18.6 -35.3	110.5	4 57.5 -36.0	110.6	4 36.4 -38.8	110.7	4 15.2 -37.6	110.7	3 54.0 -38.4	110.8	14
15	5 48.4 -32.9	111.0	5 26.8 -33.7	111.1	5 05.1 -34.5	111.2	4 43.3 -35.3	111.3	4 21.5 -36.1	111.4	3 59.6 -36.9	111.4	3 37.6 -37.6	111.5	3 15.6 -38.4	111.6	15	5 48.4 -32.9	111.0	5 26.8 -33.7	111.1	5 05.1 -34.5	111.2	4 43.3 -35.3	111.3	4 21.5 -36.1	111.4	3 59.6 -36.9	111.4	3 37.6 -37.6	111.5	3 15.6 -38.4	111.6	15
16	5 15.5 -33.0	111.9	4 53.1 -33.8	112.0	4 30.6 -34.6	112.0	4 08.0 -35.3	112.1	3 45.4 -36.1	112.2	3 22.7 -37.8	112.2	3 00.0 -37.6	112.3	2 37.2 -38.4	112.3	16	5 15.5 -33.0	111.9	4 53.1 -33.8	112.0	4 30.6 -34.6	112.0	4 08.0 -35.3	112.1	3 45.4 -36.1	112.2	3 22.7 -37.8	112.2	3 00.0 -37.6	112.3	2 37.2 -38.4	112.3	16
17	4 42.5 -33.0	112.7	4 19.3 -33.8	112.8	3 56.0 -34.6	112.9	3 32.7 -35.4	112.9	3 09.3 -36.2	113.0	2 45.9 -37.0	113.0	2 22.4 -37.7	113.1	1 58.8 -38.4	113.1	17	4 42.5 -33.0	112.7	4 19.3 -33.8	112.8	3 56.0 -34.6	112.9	3 32.7 -35.4	112.9	3 09.3 -36.2	113.0	2 45.9 -37.0	113.0	2 22.4 -37.7	113.1	1 58.8 -38.4	113.1	17
18	4 09.5 -33.1	113.6	3 45.5 -33.9	113.6	3 21.4 -34.6	113.7	2 57.3 -35.4	113.7	2 33.1 -36.2	113.8	2 08.9 -36.9	113.8	1 44.7 -37.7	113.9	1 20.4 -38.4	113.9	18	4 09.5 -33.1	113.6	3 45.5 -33.9	113.6	3 21.4 -34.6	113.7	2 57.3 -35.4	113.7	2 33.1 -36.2	113.8	2 08.9 -36.9	113.8	1 44.7 -37.7	113.9	1 20.4 -38.4	113.9	18
19	3 36.4 -33.1	114.4	3 11.6 -33.9	114.5	2 46.8 -34.6	114.5	2 12.1 -35.4	114.6	2 04.2 -36.3	114.6	1 40.4 -37.0	114.7	0 19.0 +34.7	114.7	0 0.85 -37.0	114.8	21	3 36.4 -33.1	114.4	3 11.6 -33.9	114.5	2 46.8 -34.6	114.5	2 12.1 -35.4	114.6	2 04.2 -36.3	114.6	1 40.4 -37.0	114.7	0 19.0 +34.7	114.7	0 0.85 -37.0	114.8	21
20	2 28.8 +33.2	115.4	3 02.0 +33.8	115.5	4 09.7 +34.5	115.5	4 43.5 +35.2	115.5	5 17.2 +35.9	115.6	5 50.8 +36.7	115.6	6 24.4 +37.6	115.6	6 57.9 +38.0	115.6	6	2 28.8 +33.2	115.4	3 02.0 +33.8	115.5	4 09.7 +34.5	115.5	4 43.5 +35.2	115.5	5 17.2 +35.9	115.6	5 50.8 +36.7	115.6	6 24.4 +37.6	115.6	6 57.9 +38.0	115.6	6
21	2 15.4 +32.9	116.4	3 50.8 +33.6	116.5	3 22.5 +33.6	116.6	3 07.1 +34.2	116.7	2 16.7 +36.2	116.8	2 46.8 +37.3	116.9	2 13.9 +37.6	117.0	1 30.7 +38.0	117.0	1	2 15.4 +32.9	116.4	3 50.8 +33.6	116.5	3 22.5 +33.6	116.6	3 07.1 +34.2	116.7	2 16.7 +36.2	116.8	2 46.8 +37.3	116.9	2 13.9 +37.6	117.0	1 30.7 +38.0	117.0	1
22	1 55.6 +32.3																																	

75°, 285° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	12 57.2 +30.6	97.6		12 49.1 +31.6	97.9		12 40.7 +32.6	98.1		12 32.2 +33.4	98.3		12 23.4 +34.3	98.5		12 14.4 +35.2	98.7		12 05.2 +36.0	99.0		11 55.7 +36.9	99.2		0
1	13 27.8 +30.6	96.7		13 20.7 +31.4	97.0		13 13.3 +32.3	97.2		13 05.6 +33.2	97.5		12 57.7 +34.1	97.7		12 49.6 +34.9	97.9		12 41.2 +35.8	98.1		12 32.6 +36.7	98.4		1
2	13 58.4 +30.3	95.9		13 52.1 +31.2	96.1		13 45.6 +32.1	96.4		13 38.8 +33.1	96.6		13 31.8 +33.9	96.8		13 24.5 +34.9	97.1		13 17.0 +35.7	97.3		13 09.3 +36.5	97.5		2
3	14 28.7 +30.1	95.0		14 23.3 +31.1	95.2		14 17.7 +32.0	95.5		14 11.9 +32.8	95.7		14 05.7 +33.8	96.0		13 59.4 +34.6	96.2		13 52.7 +35.5	96.5		13 45.8 +36.4	96.7		3
4	14 58.8 +29.9	94.1		14 54.4 +30.8	94.3		14 49.7 +31.8	94.6		14 44.7 +32.7	94.9		14 39.5 +33.6	95.1		14 34.0 +34.5	95.4		14 28.2 +35.4	95.6		14 22.2 +36.2	95.9		4
5	15 28.7 +29.7	93.2		15 25.2 +30.6	93.5		15 21.5 +31.5	93.7		15 17.4 +32.5	94.0		15 13.1 +33.4	94.3		15 08.5 +34.2	94.5		15 03.6 +35.1	94.8		14 58.4 +36.0	95.1		5
6	15 58.4 +29.4	92.3		15 55.8 +30.4	92.6		15 53.0 +31.3	92.8		15 49.9 +32.2	93.1		15 46.5 +33.1	93.4		15 42.7 +34.1	93.7		15 38.7 +35.0	94.0		15 34.4 +35.9	94.3		6
7	16 27.8 +29.2	91.4		16 26.2 +30.2	91.7		16 24.3 +31.1	92.0		16 22.1 +32.1	92.3		16 19.6 +33.0	92.5		16 16.8 +33.9	92.8		16 13.7 +34.7	93.1		16 10.3 +35.6	93.4		7
8	16 57.0 +29.0	90.5		16 56.4 +29.9	90.8		16 55.4 +30.9	91.1		16 54.2 +31.8	91.4		16 52.6 +32.7	91.7		16 50.7 +33.6	92.0		16 48.4 +34.6	92.3		16 45.9 +35.4	92.6		8
9	17 26.0 +28.7	89.5		17 26.3 +29.7	89.9		17 26.3 +30.7	90.2		17 26.0 +31.6	90.5		17 25.3 +32.5	90.8		17 24.3 +33.4	91.1		17 23.0 +34.3	91.4		17 21.3 +35.3	91.7		9
10	17 54.7 +28.5	88.6		17 56.0 +29.4	88.9		17 57.0 +30.3	89.3		17 57.6 +31.3	89.6		17 57.8 +32.3	89.9		17 57.7 +33.2	90.2		17 57.3 +34.1	90.6		17 56.6 +35.0	90.9		10
11	18 23.2 +28.2	87.7		18 25.4 +29.2	88.0		18 27.3 +30.2	88.4		18 28.9 +31.1	88.7		18 30.1 +32.0	89.0		18 30.9 +33.0	89.4		18 31.4 +33.9	89.7		18 31.6 +34.7	90.0		11
12	18 51.4 +27.9	86.8		18 54.6 +28.9	87.1		18 57.5 +29.8	87.4		19 00.0 +30.8	87.8		19 02.1 +31.8	88.1		19 03.9 +32.7	88.5		19 05.3 +33.6	88.8		19 06.3 +34.6	89.2		12
13	19 19.3 +27.6	85.8		19 23.5 +28.6	86.2		19 27.3 +29.6	86.5		19 30.8 +30.5	86.9		19 33.9 +31.4	87.2		19 36.6 +32.4	87.6		19 38.9 +33.4	87.9		19 40.9 +34.2	88.3		13
14	19 46.9 +27.4	84.9		19 52.1 +28.3	85.2		19 56.9 +29.3	85.6		20 01.3 +30.3	86.0		20 05.3 +31.2	86.3		20 09.0 +32.1	86.7		20 12.3 +33.0	87.1		20 15.1 +34.1	87.4		14
15	20 14.3 +27.0	83.9		20 20.4 +28.0	84.3		20 26.2 +29.0	84.7		20 31.6 +29.9	85.0		20 36.5 +31.0	85.4		20 41.1 +31.9	85.8		20 45.3 +32.9	86.2		20 49.2 +33.7	86.5		15
16	20 41.3 +26.7	83.0		20 48.4 +27.7	83.4		20 55.2 +28.6	83.7		21 01.5 +29.7	84.1		21 07.5 +30.6	84.5		21 13.0 +31.6	84.9		21 18.2 +32.5	85.3		21 22.9 +33.5	85.7		16
17	21 08.0 +26.4	82.0		21 16.1 +27.4	82.4		21 23.8 +28.4	82.8		21 31.2 +29.3	83.2		21 38.1 +30.3	83.6		21 44.6 +31.3	84.0		21 50.7 +32.2	84.4		21 56.4 +33.1	84.8		17
18	21 34.4 +26.0	81.1		21 43.5 +27.0	81.5		21 52.2 +28.0	81.8		22 00.5 +29.0	82.2		22 08.4 +30.0	82.6		22 15.9 +30.9	83.1		22 22.9 +31.9	83.5		22 29.5 +32.9	83.9		18
19	22 00.4 +25.7	80.1		22 10.5 +26.7	80.5		22 20.2 +27.7	80.9		22 29.5 +28.7	81.3		22 38.4 +29.7	81.7		22 46.8 +30.7	82.1		22 54.8 +31.6	82.5		23 02.4 +32.6	83.0		19
20	22 26.1 +25.3	79.1		22 37.2 +26.4	79.5		22 47.9 +27.4	79.9		22 58.2 +28.3	80.3		23 08.1 +29.3	80.8		23 17.5 +30.3	81.2		23 26.4 +31.3	81.6		23 35.0 +32.2	82.0		20
21	22 51.4 +25.0	78.1		23 03.6 +26.0	78.5		23 15.3 +27.0	79.0		23 26.5 +28.0	79.4		23 37.4 +29.0	79.8		23 47.8 +29.9	80.2		23 57.7 +30.9	80.7		24 07.2 +31.9	81.1		21
22	23 16.4 +24.6	77.1		23 29.6 +25.6	77.6		23 42.3 +26.6	78.0		23 54.5 +27.7	78.4		24 06.4 +28.6	78.9		24 17.7 +29.6	79.3		24 28.6 +30.6	79.7		24 39.1 +31.5	80.2		22
23	23 41.0 +24.3	76.1		23 55.2 +25.2	76.6		24 08.9 +26.2	77.0		24 22.2 +27.2	77.4		24 35.0 +28.2	77.9		24 47.3 +29.3	78.3		24 59.2 +30.2	78.8		25 10.6 +31.2	79.3		23
24	24 05.3 +23.8	75.1		24 20.4 +24.9	75.6		24 35.1 +25.9	76.0		24 49.4 +26.8	76.5		25 03.2 +27.9	76.9		25 16.6 +28.8	77.4		25 29.4 +29.9	77.8		25 41.8 +30.8	78.3		24
25	24 29.1 +23.4	74.1		24 45.3 +24.4	74.6		25 01.0 +25.4	75.0		25 16.3 +26.4	75.5		25 31.1 +27.4	75.9		25 45.4 +28.5	76.4		25 59.3 +29.4	76.9		26 12.6 +30.5	77.4		25
26	24 52.5 +23.0	73.1		25 09.7 +24.0	73.6		25 26.4 +25.1	74.0		25 42.7 +26.1	74.5		25 58.5 +27.1	75.0		26 13.9 +28.0	75.4		26 28.7 +29.1	75.9		26 43.1 +30.0	76.4		26
27	25 15.5 +22.6	72.1		25 33.7 +23.7	72.6		25 51.5 +24.6	73.0		26 08.8 +25.6	73.5		26 25.6 +26.6	74.0		26 41.9 +27.7	74.4		26 57.8 +28.6	74.9		27 13.1 +29.7	75.4		27
28	25 38.1 +22.2	71.1		25 57.4 +23.1	71.5		26 16.1 +24.2	72.0		26 34.4 +25.2	72.5		26 52.2 +26.3	73.0		27 09.6 +27.2	73.4		27 26.4 +28.3	73.9		27 42.8 +29.2	74.4		28
29	26 00.3 +21.7	70.0		26 20.5 +22.8	70.5		26 40.3 +23.8	71.0		26 59.6 +24.8	71.5		27 18.5 +25.7	71.9		27 36.8 +26.8	72.4		27 54.7 +27.8	72.9		28 12.0 +28.8	73.5		29
30	26 22.0 +21.3	69.0		26 43.3 +22.2	69.5		27 04.1 +23.3	70.0		27 24.4 +24.3	70.4		27 44.2 +25.4	70.9		28 03.6 +26.3	71.4		28 22.5 +27.3	71.9		28 40.8 +28.4	72.5		30
31	26 43.3 +20.8	68.0		27 05.5 +21.9	68.4		27 27.4 +22.8	68.9		27 48.7 +23.9	69.4		28 09.6 +24.8	69.9		28 29.9 +25.9	70.4		28 49.8 +26.9	70.9		29 09.2 +27.8	71.5		31
32	27 04.1 +20.3	66.9		27 27.4 +21.3	67.4		27 50.2 +22.4	67.9		28 12.6 +23.3	68.4		28 34.4 +24.4	68.9		28 55.8 +25.4	69.4		29 16.7 +26.4	69.9		29 37.0 +27.5	70.4		32
33	27 24.4 +19.8	65.9		27 48.7 +20.9	66.3		28 12.6 +21.8	66.8		28 35.9 +22.9	67.3		28 58.8 +23.9	67.8		29 21.2 +24.9	68.3		29 43.1 +25.9	68.9		30 04.5 +26.9	69.4		33
34	27 44.2 +19.4	64.8		28 09.6 +20.3	65.3		28 34.4 +21.4	65.8		28 58.8 +22.4	66.3		29 22.7 +23.4	66.8		29 46.1 +24.5	67.3		30 09.0 +25.5	67.8		30 31.4 +26.5	68.4		34
35	28 03.6 +18.9	63.7		28 29.9 +20.8	64.2		28 55.8 +20.9	64.7		29 21.2 +21.9	65.2		29 46.1 +22.9	65.7		30 10.6 +23.9	66.2		30 34.5 +24.9	66.8		30 57.9 +25.9	67.3		35
36	28 22.5 +18.3	62.6		28 49.8 +19.4	63.1		29 16.7 +20.3	63.6		29 43.1 +21.4	64.1		30 09.0 +22.4	64.7		30 34.5 +23.4	65.2		30 59.4 +24.4	65.7		31 23.8 +25.4	66.3		36
37	28 40.8 +17.8	61.6		29 09.2 +18.8	62.0		29 37.0 +19.9	62.5		30 04.5 +20.8	63.1		30 31.4 +21.9	63.6		30 57.9 +22.8	64.1								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 75° , 285°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	12 57.2 -30.9	97.6	12 49.1 -31.8	97.9	12 40.7 -32.6	98.1	12 32.2 -33.6	98.3	12 23.4 -34.4	98.5	12 14.4 -35.3	98.7	12 05.2 -36.1	99.0	11 55.7 -36.9	99.2	11 18.8 -37.1	100.0	11 29.1 -36.3	99.8	11 41.7 -37.3	100.8	10 41.4 -36.5	101.4	10 04.4 -37.3	101.6	0
1	12 26.3 -31.1	98.5	12 17.3 -31.9	98.7	12 08.1 -32.9	98.9	11 58.6 -33.7	99.2	11 49.0 -34.6	99.4	11 39.1 -35.4	99.6	11 20.1 -36.3	99.8	11 29.1 -36.3	99.8	11 18.8 -37.1	100.0	11 29.1 -36.3	99.8	11 41.7 -37.3	100.8	10 41.4 -36.5	101.4	10 04.4 -37.3	101.6	1
2	11 55.2 -31.2	99.4	11 45.4 -32.1	99.6	11 35.2 -32.9	99.8	11 24.9 -33.8	100.0	11 14.4 -34.7	100.2	11 03.7 -35.6	100.4	10 52.8 -36.4	100.6	10 16.4 -36.5	101.4	10 04.4 -37.3	101.6	10 28.6 -36.2	105.3	10 41.7 -37.3	104.7	10 41.7 -37.3	104.7	10 04.4 -37.3	101.6	2
3	11 24.0 -31.3	100.3	11 13.3 -32.3	100.5	11 02.3 -33.2	100.6	10 51.1 -34.0	100.8	10 39.7 -34.8	101.0	10 28.1 -35.6	101.2	10 16.4 -36.5	101.4	10 04.4 -37.3	101.6	9 39.9 -36.7	102.2	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	4
4	10 52.7 -31.5	101.1	10 41.0 -32.4	101.3	10 29.1 -33.2	101.5	10 17.1 -34.1	101.7	10 04.9 -35.0	101.9	9 52.5 -35.9	102.0	9 39.9 -36.7	102.2	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	9 27.1 -37.4	102.4	4
5	10 21.2 -31.7	102.0	10 08.6 -32.5	102.2	9 55.9 -33.4	102.3	9 43.0 -34.3	102.5	9 29.9 -35.1	102.7	9 16.6 -35.9	102.8	9 03.2 -36.7	103.0	8 49.7 -37.6	103.1	8 49.7 -37.6	103.1	8 49.7 -37.6	103.1	8 49.7 -37.6	103.1	8 49.7 -37.6	103.1	8 49.7 -37.6	103.1	5
6	9 49.5 -31.7	102.9	9 36.1 -32.6	103.0	9 22.5 -33.5	103.2	9 08.7 -34.3	103.3	8 54.8 -35.2	103.5	8 40.7 -36.0	103.6	8 26.5 -36.8	103.8	8 12.1 -37.6	103.9	8 12.1 -37.6	103.9	8 12.1 -37.6	103.9	8 12.1 -37.6	103.9	8 12.1 -37.6	103.9	8 12.1 -37.6	103.9	6
7	9 17.8 -31.9	103.7	9 03.5 -32.8	103.9	8 49.0 -33.6	104.0	8 34.4 -34.5	104.2	8 19.6 -35.3	104.3	8 04.7 -36.1	104.5	7 49.7 -37.0	104.6	7 34.5 -37.7	104.7	7 34.5 -37.7	104.7	7 34.5 -37.7	104.7	7 34.5 -37.7	104.7	7 34.5 -37.7	104.7	7 34.5 -37.7	104.7	7
8	8 45.9 -32.0	104.6	8 30.7 -32.9	104.7	8 15.4 -33.7	104.9	7 59.9 -34.5	105.0	7 44.3 -35.4	105.1	7 28.6 -36.2	105.3	7 12.7 -37.0	105.4	6 56.8 -37.8	105.5	6 56.8 -37.8	105.5	6 56.8 -37.8	105.5	6 56.8 -37.8	105.5	6 56.8 -37.8	105.5	6 56.8 -37.8	105.5	8
9	8 13.9 -32.1	105.4	7 57.8 -32.8	105.6	7 41.7 -33.8	105.7	7 25.4 -34.7	105.8	7 08.9 -35.4	105.9	6 52.4 -36.3	106.1	6 19.0 -37.9	106.3	6 19.0 -37.9	106.3	6 19.0 -37.9	106.3	6 19.0 -37.9	106.3	6 19.0 -37.9	106.3	6 19.0 -37.9	106.3	9		
10	7 41.8 -32.3	106.3	7 24.9 -33.1	106.4	7 07.9 -33.9	106.5	6 50.7 -34.7	106.6	6 33.5 -35.6	106.8	6 16.1 -36.3	106.9	5 58.7 -37.2	107.0	5 41.1 -37.9	107.1	5 41.1 -37.9	107.1	5 41.1 -37.9	107.1	5 41.1 -37.9	107.1	5 41.1 -37.9	107.1	10		
11	7 09.5 -32.3	107.1	6 51.8 -33.2	107.2	6 34.0 -34.0	107.4	6 16.0 -34.8	107.5	5 57.9 -35.6	107.6	5 39.8 -36.5	107.7	5 21.5 -37.2	107.8	5 03.2 -38.0	107.8	5 03.2 -38.0	107.8	5 03.2 -38.0	107.8	5 03.2 -38.0	107.8	5 03.2 -38.0	107.8	11		
12	6 37.2 -32.4	108.0	6 18.6 -33.2	108.1	6 00.0 -34.1	108.2	5 41.2 -34.9	108.3	5 22.3 -35.7	108.4	5 03.3 -36.4	108.5	4 44.3 -37.3	108.5	4 25.2 -38.1	108.6	4 25.2 -38.1	108.6	4 25.2 -38.1	108.6	4 25.2 -38.1	108.6	4 25.2 -38.1	108.6	12		
13	6 04.8 -32.5	108.8	5 45.4 -33.3	108.9	5 25.9 -34.1	109.0	5 06.3 -34.9	109.1	4 46.6 -35.7	109.2	4 26.9 -36.6	109.3	4 07.0 -37.3	109.3	3 47.1 -38.0	109.4	3 47.1 -38.0	109.4	3 47.1 -38.0	109.4	3 47.1 -38.0	109.4	3 47.1 -38.0	109.4	13		
14	5 32.3 -32.5	109.7	5 12.1 -33.4	109.8	4 51.8 -34.2	109.8	4 31.4 -35.0	109.9	4 10.9 -35.8	110.0	3 50.3 -36.5	110.1	3 29.7 -37.3	110.1	3 09.1 -38.1	110.2	3 09.1 -38.1	110.2	3 09.1 -38.1	110.2	3 09.1 -38.1	110.2	3 09.1 -38.1	110.2	14		
15	4 59.8 -32.6	110.5	4 17.6 -33.4	110.6	4 23.9 -34.4	110.7	3 56.4 -35.1	110.7	3 35.1 -35.8	110.8	3 13.8 -36.6	110.9	2 52.4 -37.4	110.9	2 31.0 -38.2	110.9	2 31.0 -38.2	110.9	2 31.0 -38.2	110.9	2 31.0 -38.2	110.9	2 31.0 -38.2	110.9	15		
16	4 27.2 -32.7	111.4	4 05.3 -33.5	111.4	3 43.3 -34.2	111.5	3 21.3 -35.0	111.5	2 59.3 -35.9	111.6	2 39.4 -36.7	111.6	2 15.0 -37.4	111.7	1 52.8 -38.1	111.7	1 52.8 -38.1	111.7	1 52.8 -38.1	111.7	1 52.8 -38.1	111.7	1 52.8 -38.1	111.7	16		
17	3 54.5 -32.7	112.2	3 31.8 -33.5	112.3	3 09.1 -34.4	112.3	2 46.3 -35.2	112.4	2 23.4 -35.9	112.4	2 00.5 -36.6	112.4	1 37.6 -37.4	112.5	1 14.7 -38.2	112.5	1 14.7 -38.2	112.5	1 14.7 -38.2	112.5	1 14.7 -38.2	112.5	1 14.7 -38.2	112.5	17		
18	3 21.8 -32.8	113.0	2 58.3 -33.6	113.1	2 34.7 -34.3	113.1	2 11.1 -35.1	113.2	1 47.5 -35.9	113.2	1 23.9 -36.7	113.2	1 00.2 -37.5	113.3	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	18		
19	2 49.0 -32.8	113.9	2 24.7 -33.6	113.9	2 00.4 -34.4	114.0	1 36.0 -35.2	114.0	1 11.6 -35.9	114.0	0 47.7 -36.7	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	0 22.7 -37.4	114.0	19		
20	2 16.2 -32.8	114.7	1 51.1 -33.6	114.7	1 26.0 -34.4	114.8	1 00.8 -35.1	114.8	0 35.7 -36.0	114.8	0 10.5 -36.7	114.8	0 14.7 +37.4	65.2	0 39.9 +38.1	65.2	0 39.9 +38.1	65.2	0 39.9 +38.1	65.2	0 39.9 +38.1	65.2	0 39.9 +38.1	65.2	0 39.9 +38.1	65.2	20
21	1 43.4 -32.9	115.6	1 17.5 -33.6	115.6	0 51.6 -34.4	115.6	0 25.7 -35.2	115.6	0 0.3 +35.9	64.4	0 26.2 +36.7	64.4	0 52.1 +37.5	64.4	1 18.0 +38.2	64.4	1 18.0 +38.2	64.4	1 18.0 +38.2	64.4	1 18.0 +38.2	64.4	1 18.0 +38.2	64.4	21		
22	1 10.5 -32.8	116.4	0 43.9 -33.7	116.4	0 17.2 -34.4	116.4	0 36.2 +34.4	62.8	0 44.7 +35.2	62.8	1 12.1 +35.9	62.8	1 39.6 +36.6	62.8	2 07.0 +37.3	62.8	2 34.3 +38.1	62.9	2 34.3 +38.1	62.9	2 34.3 +38.1	62.9	2 34.3 +38.1	62.9	2 34.3 +38.1	62.9	22
23	0 37.7 -32.9	117.2	0 10.2 -33.6	117.2	0 23.4 +33.7	61.9	0 51.6 +34.4	61.9	1 19.9 +35.1	62.0	1 48.0 +35.9	62.0	2 16.2 +36.6	62.0	2 44.3 +37.4	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	24
24	0 04.8 -32.9	118.1	0 23.4 +33.7	61.9	0 51.6 +34.4	61.9	1 19.9 +35.1	62.0	1 48.0 +35.9	62.0	2 16.2 +36.6	62.0	2 44.3 +37.4	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	3 12.4 +38.1	62.1	24
25	0 28.1 +32.8	61.1	0 57.1 +33.6	61.1	1 26.0 +34.4	61.1	1 55.0 +35.1	61.2	2 23.9 +35.9	61.2	2 52.8 +36.6	61.2	3 21.7 +37.3	61.3	3 50.5 +38.0	61.3	4 28.5 +38.0	61.6	4 28.5 +38.0	61.6	4 28.5 +38.0	61.6	4 28.5 +38.0	61.6	4 28.5 +38.0	61.6	25
26	1 00.9 +32.9	60.3	1 30.7 +33.6	60.3	2 00.4 +34.4	60.3	2 30.1 +35.1	60.3	2 59.8 +35.8	60.4	3 29.4 +36.6	60.4	3 59.0 +37.3	60.5	4 28.5 +38.0	60.6	4 28.5 +38.0	60.6	4 28.5 +38.0	60.6	4 28.5 +38.0	60.6	4 28.5 +38.0	60.6	26		
27	1 33.8 +32.8	59.4	2 04.3 +33.6	59.5	2 34.8 +34.3	59.5	3 05.2 +35.1	59.5	3 35.6 +35.8	59.6	4 06.0 +36.5	59.6	4 36.3 +37.2	59.7	5 06.5 +37.9	59.8	5 44.4 +37.9	59.9	5 44.4 +37.9	59.9	5 44.4 +37.9	59.9	5 44.4 +37.9	59.9	5 44.4 +37.9	59.9	27
28	2 06.6 +32.8	58.6	2 37.9 +33.5	58.6	3 09.1 +34.3	58.7	3 40.3 +35.0	58.7	4 11.4 +35.8	58.8	4 42.5 +36.4	58.8	5 13.5 +37.2	58.9													

76°, 284° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	12 05.6 +30.6	97.1	11 58.1 +31.5	97.3	11 50.3 +32.4	97.5	11 42.4 +33.3	97.7	11 34.2 +34.2	97.9	11 25.8 +35.0	98.1	11 17.2 +35.9	98.3	11 08.4 +36.7	98.5	11 00.0 +37.6	98.5	11 15.2 +35.1	94.2	14 10.6 +36.0	94.5	14 10.6 +36.0	94.5	0
1	12 36.2 +30.4	96.2	12 29.6 +31.3	96.4	12 22.7 +32.3	96.7	12 15.7 +33.1	96.9	12 08.4 +34.0	97.1	12 00.8 +34.9	97.3	11 53.1 +35.8	97.5	11 45.1 +36.6	97.7	11 45.1 +36.6	97.7	11 25.2 +36.5	96.9	12 21.7 +36.5	96.9	12 21.7 +36.5	96.9	1
2	13 06.6 +30.3	95.3	13 00.9 +31.2	95.6	12 55.0 +32.1	95.8	12 48.8 +33.0	96.0	12 42.4 +33.8	96.3	12 35.7 +34.8	96.5	12 28.9 +35.6	96.7	12 21.7 +36.5	96.9	12 21.7 +36.5	96.9	12 21.7 +36.5	96.9	12 21.7 +36.5	96.9	12 21.7 +36.5	96.9	2
3	13 36.9 +30.0	94.5	13 32.1 +31.0	94.7	13 27.1 +31.9	94.9	13 21.8 +32.8	95.2	13 16.2 +33.7	95.4	13 10.5 +34.5	95.6	13 04.5 +35.4	95.9	13 58.2 +36.3	96.1	13 58.2 +36.3	96.1	13 58.2 +36.3	96.1	13 58.2 +36.3	96.1	13 58.2 +36.3	96.1	3
4	14 06.9 +29.9	93.6	14 03.1 +30.8	93.8	13 59.0 +31.7	94.1	13 54.6 +32.6	94.3	13 49.9 +33.6	94.6	13 45.0 +34.4	94.8	13 39.9 +35.3	95.0	13 34.5 +36.1	95.3	13 34.5 +36.1	95.3	13 34.5 +36.1	95.3	13 34.5 +36.1	95.3	13 34.5 +36.1	95.3	4
5	14 36.8 +29.6	92.7	14 33.9 +30.5	92.9	14 30.7 +31.5	93.2	14 27.2 +32.4	93.4	14 23.5 +33.3	93.7	14 19.4 +34.3	94.0	14 15.2 +35.1	94.2	14 10.6 +36.0	94.5	14 10.6 +36.0	94.5	14 10.6 +36.0	94.5	14 10.6 +36.0	94.5	14 10.6 +36.0	94.5	5
6	15 06.4 +29.5	91.8	15 04.4 +30.4	92.0	15 02.2 +31.3	92.3	14 59.6 +32.2	92.6	14 56.8 +33.1	92.8	14 53.7 +34.0	93.1	14 50.3 +34.9	93.4	14 46.6 +35.8	93.6	14 46.6 +35.8	93.6	14 46.6 +35.8	93.6	14 46.6 +35.8	93.6	14 46.6 +35.8	93.6	6
7	15 35.9 +29.2	90.9	15 34.8 +30.2	91.1	15 33.5 +31.1	91.4	15 31.8 +32.1	91.7	15 29.9 +33.0	92.0	15 27.7 +33.8	92.3	15 25.2 +34.7	92.5	15 22.4 +35.6	92.8	15 22.4 +35.6	92.8	15 22.4 +35.6	92.8	15 22.4 +35.6	92.8	15 22.4 +35.6	92.8	7
8	16 05.1 +29.0	90.0	16 05.0 +29.9	90.2	16 04.6 +30.8	90.5	16 03.9 +31.8	90.8	16 02.9 +32.7	91.1	16 01.5 +33.7	91.4	15 59.9 +34.6	91.7	15 58.0 +35.4	92.0	15 58.0 +35.4	92.0	15 58.0 +35.4	92.0	15 58.0 +35.4	92.0	15 58.0 +35.4	92.0	8
9	16 34.1 +28.7	89.0	16 34.9 +29.7	89.3	16 35.4 +30.7	89.6	16 35.7 +31.5	89.9	16 35.6 +32.5	90.2	16 35.2 +33.4	90.5	16 34.5 +34.3	90.8	16 33.4 +35.2	91.1	16 33.4 +35.2	91.1	16 33.4 +35.2	91.1	16 33.4 +35.2	91.1	16 33.4 +35.2	91.1	9
10	17 02.8 +28.5	88.1	17 04.6 +29.5	88.4	17 06.1 +30.4	88.7	17 07.2 +31.4	89.0	17 08.1 +32.3	89.4	17 08.6 +33.2	89.7	17 08.8 +34.1	90.0	17 08.6 +35.0	90.3	17 08.6 +35.0	90.3	17 08.6 +35.0	90.3	17 08.6 +35.0	90.3	17 08.6 +35.0	90.3	10
11	17 31.3 +28.2	87.2	17 34.1 +29.2	87.5	17 36.5 +30.1	87.8	17 38.6 +31.1	88.2	17 40.4 +32.0	88.5	17 41.8 +32.9	88.8	17 42.9 +33.9	89.1	17 43.6 +34.8	89.4	17 43.6 +34.8	89.4	17 43.6 +34.8	89.4	17 43.6 +34.8	89.4	17 43.6 +34.8	89.4	11
12	17 59.5 +28.0	86.3	18 03.3 +28.9	86.6	18 06.6 +29.9	86.9	18 09.7 +30.8	87.3	18 12.4 +31.8	87.6	18 14.7 +32.8	87.9	18 16.8 +33.6	88.2	18 18.4 +34.6	88.6	18 18.4 +34.6	88.6	18 18.4 +34.6	88.6	18 18.4 +34.6	88.6	18 18.4 +34.6	88.6	12
13	18 27.5 +27.7	85.3	18 32.2 +28.7	85.7	18 36.5 +29.7	86.0	18 40.5 +30.6	86.4	18 44.2 +31.5	86.7	18 47.5 +32.4	87.0	18 50.4 +33.4	87.4	18 53.0 +34.3	87.7	18 53.0 +34.3	87.7	18 53.0 +34.3	87.7	18 53.0 +34.3	87.7	18 53.0 +34.3	87.7	13
14	18 55.2 +27.4	84.4	19 00.9 +28.4	84.8	19 06.2 +29.3	85.1	19 11.1 +30.3	85.4	19 15.7 +31.3	85.8	19 19.9 +32.2	86.1	19 23.8 +33.1	86.5	19 27.3 +34.0	86.8	19 27.3 +34.0	86.8	19 27.3 +34.0	86.8	19 27.3 +34.0	86.8	19 27.3 +34.0	86.8	14
15	19 22.6 +27.1	83.5	19 29.3 +28.1	83.8	19 35.5 +29.1	84.2	19 41.4 +30.1	84.5	19 47.0 +31.0	84.9	19 52.1 +32.0	85.2	19 56.9 +32.9	85.6	20 01.3 +33.8	86.0	20 01.3 +33.8	86.0	20 01.3 +33.8	86.0	20 01.3 +33.8	86.0	20 01.3 +33.8	86.0	15
16	19 49.7 +26.8	82.5	19 57.4 +27.8	82.9	20 04.6 +28.8	83.2	20 11.5 +29.7	83.6	20 18.0 +30.7	84.0	20 24.1 +31.6	84.3	20 29.8 +32.6	84.7	20 35.1 +33.6	85.1	20 35.1 +33.6	85.1	20 35.1 +33.6	85.1	20 35.1 +33.6	85.1	20 35.1 +33.6	85.1	16
17	20 16.6 +26.5	81.6	20 25.2 +27.5	81.9	20 33.4 +28.5	82.3	20 41.2 +29.5	82.7	20 48.7 +30.4	83.1	20 55.7 +31.4	83.4	21 02.4 +32.3	83.8	21 08.7 +33.2	84.2	21 08.7 +33.2	84.2	21 08.7 +33.2	84.2	21 08.7 +33.2	84.2	21 08.7 +33.2	84.2	17
18	20 43.1 +26.2	80.6	20 52.7 +27.1	81.0	21 01.9 +28.1	81.4	21 10.7 +29.1	81.7	21 19.1 +30.1	82.1	21 27.1 +31.1	82.5	21 34.7 +32.0	82.9	21 41.9 +33.0	83.3	21 41.9 +33.0	83.3	21 41.9 +33.0	83.3	21 41.9 +33.0	83.3	21 41.9 +33.0	83.3	18
19	21 09.3 +25.8	79.6	21 19.8 +26.9	80.0	21 30.0 +27.9	80.4	21 39.8 +28.8	80.8	21 49.2 +29.8	81.2	21 58.2 +30.7	81.6	22 06.7 +31.7	82.0	22 14.9 +32.6	82.4	22 14.9 +32.6	82.4	22 14.9 +32.6	82.4	22 14.9 +32.6	82.4	22 14.9 +32.6	82.4	19
20	21 35.1 +25.5	78.7	21 46.7 +26.5	79.1	21 57.9 +27.5	79.5	22 08.6 +28.5	79.9	22 19.0 +29.5	80.3	22 28.9 +30.5	80.7	22 38.4 +31.4	81.1	22 47.5 +32.4	81.5	22 47.5 +32.4	81.5	22 47.5 +32.4	81.5	22 47.5 +32.4	81.5	22 47.5 +32.4	81.5	20
21	22 00.6 +25.2	77.7	22 13.2 +26.2	78.1	22 25.4 +27.1	78.5	22 37.1 +28.2	78.9	22 48.5 +29.1	79.3	22 59.4 +30.1	79.7	23 09.8 +31.1	80.2	23 19.9 +32.0	80.6	23 19.9 +32.0	80.6	23 19.9 +32.0	80.6	23 19.9 +32.0	80.6	23 19.9 +32.0	80.6	21
22	22 25.8 +24.8	76.7	22 39.4 +25.8	77.1	22 52.5 +26.9	77.5	23 05.3 +27.8	78.0	23 17.6 +28.8	78.4	23 29.5 +29.7	78.8	23 40.9 +30.7	79.2	23 51.9 +31.7	79.7	23 51.9 +31.7	79.7	23 51.9 +31.7	79.7	23 51.9 +31.7	79.7	23 51.9 +31.7	79.7	22
23	22 50.6 +24.5	75.7	23 05.2 +25.5	76.1	23 19.4 +26.4	76.6	23 33.1 +27.4	77.0	23 46.4 +28.4	77.4	23 59.2 +29.4	77.8	24 11.6 +30.4	78.3	24 23.6 +31.3	78.7	24 23.6 +31.3	78.7	24 23.6 +31.3	78.7	24 23.6 +31.3	78.7	24 23.6 +31.3	78.7	23
24	23 15.1 +24.1	74.7	23 30.7 +25.0	75.2	23 45.8 +26.1	75.6	24 00.5 +27.1	76.0	24 14.8 +27.1	76.5	24 28.6 +29.1	76.9	24 42.0 +30.0	77.3	24 42.0 +30.0	77.3	24 42.0 +30.0	77.3	24 42.0 +30.0	77.3	24 42.0 +30.0	77.3	24 42.0 +30.0	77.3	24
25	23 39.2 +23.6	73.7	23 55.7 +24.7	74.2	24 11.9 +25.1	74.6	24 27.6 +26.7	75.0	24 42.9 +27.7	75.5	24 57.7 +28.7	75.9	25 12.0 +29.7	76.4	25 25.9 +30.7	76.8	25 25.9 +30.7	76.8	25 25.9 +30.7	76.8	25 25.9 +30.7	76.8	25 25.9 +30.7	76.8	25
26	24 02.8 +23.3	72.7	24 20.4 +24.3	73.2	24 37.6 +25.3	73.6	24 54.3 +26.3	74.1	25 10.6 +27.2	74.5	25 26.4 +28.2	75.0	25 41.7 +29.3	75.4	25 56.6 +30.2	75.9	25 56.6 +30.2	75.9	25 56.6 +30.2	75.9	25 56.6 +30.2	75.9	25 56.6 +30.2	75.9	26
27	24 26.1 +22.9	71.7	24 44.7 +23.9	72.2	25 02.9 +24.9	72.6	25 20.6 +25.9	73.1	25 37.8 +26.9	73.5	25 54.6 +27.9	74.0	26 11.0 +28.8	74.4	26 26.8 +29.9	74.9	26 26.8 +29.9	74.9	26 26.8 +29.9	74.9	26 26.8 +29.9	74.9	26 26.8 +29.9	74.9	27
28	24 49.0 +22.5	70.7	25 08.6 +23.5	71.2	25 27.8 +24.5	71.6	25 46.5 +25.5	72.1	26 04.7 +26.5	72.5	26 22.5 +27.5	73.0	26 39.8 +28.5	73.5	26 56.7 +29.4	73.9	26 56.7 +29.4	73.9	26 56.7 +29.4	73.9	26 56.7 +29.4	73.9	26 56.7 +29.4	73.9	26
29	25 11.5 +22.0	69.7	25 32.1 +23.0	70.1	25 52.3 +24.0	70.6	26 12.0 +25.0	71.1	26 31.2 +26.1	71.5	26														

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 76°, 284°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	12 05.6 -30.7	97.1	11 58.1 -31.7	97.3	11 50.3 -32.5	97.5	11 42.4 -33.5	97.7	11 34.2 -34.3	97.9	11 25.8 -35.2	98.1	11 17.2 -36.0	98.3	11 08.4 -36.9	98.5	0	11 08.4 -36.9	98.5	11 08.4 -36.9	98.5	0	11 08.4 -36.9	98.5	0
1	11 34.9 -31.0	98.0	11 26.4 -31.8	98.2	11 17.8 -32.7	98.4	11 08.9 -33.6	98.6	10 59.9 -34.5	98.8	10 50.6 -35.3	99.0	10 41.2 -36.2	99.2	10 31.5 -37.0	99.3	1	10 31.5 -37.0	99.3	10 31.5 -37.0	99.3	1	10 31.5 -37.0	99.3	1
2	11 03.9 -31.0	98.9	10 54.6 -32.0	99.0	10 45.1 -32.9	99.2	10 35.3 -33.7	99.4	10 25.4 -34.6	99.6	10 15.3 -35.4	99.8	10 05.0 -36.3	100.0	9 54.5 -37.0	100.1	2	9 54.5 -37.0	100.1	9 54.5 -37.0	100.1	2	9 54.5 -37.0	100.1	2
3	10 32.9 -31.2	99.7	10 22.6 -32.1	99.9	10 12.2 -33.0	100.1	10 01.6 -33.8	100.3	9 50.8 -34.7	100.4	9 39.9 -35.6	100.6	9 28.7 -36.3	100.8	9 17.5 -37.3	100.9	3	9 17.5 -37.3	100.9	9 17.5 -37.3	100.9	3	9 17.5 -37.3	100.9	3
4	10 01.7 -31.4	100.6	9 50.5 -32.2	100.8	9 39.2 -33.1	100.9	9 27.8 -34.0	101.1	9 16.1 -34.8	101.3	9 04.3 -35.6	101.4	8 52.4 -36.5	101.6	8 40.2 -37.3	101.7	4	8 40.2 -37.3	101.7	8 40.2 -37.3	101.7	4	8 40.2 -37.3	101.7	4
5	9 30.3 -31.5	101.5	9 18.3 -32.4	101.6	9 06.1 -33.2	101.8	8 53.8 -34.1	101.9	8 41.3 -34.9	102.1	8 28.7 -35.8	102.2	8 15.9 -36.6	102.4	8 02.9 -37.4	102.5	5	8 02.9 -37.4	102.5	8 02.9 -37.4	102.5	5	8 02.9 -37.4	102.5	5
6	8 58.8 -31.6	102.3	8 45.9 -32.4	102.5	8 32.9 -33.3	102.6	8 19.7 -34.2	102.8	8 06.4 -35.0	102.9	7 52.9 -35.8	103.0	7 39.3 -36.7	103.2	7 25.5 -37.4	103.3	6	7 25.5 -37.4	103.3	7 25.5 -37.4	103.3	6	7 25.5 -37.4	103.3	6
7	8 27.2 -31.7	103.2	8 13.5 -32.6	103.3	7 59.6 -33.5	103.5	7 45.5 -34.2	103.6	7 31.4 -35.2	103.7	7 17.1 -36.0	103.9	7 02.6 -36.7	104.0	6 48.1 -37.6	104.1	7	6 48.1 -37.6	104.1	6 48.1 -37.6	104.1	7	6 48.1 -37.6	104.1	7
8	7 55.5 -31.8	104.0	7 40.9 -32.7	104.2	7 26.1 -33.5	104.3	7 11.3 -34.4	104.4	6 56.2 -35.2	104.5	6 41.1 -36.0	104.7	6 25.9 -36.9	104.8	6 10.5 -37.6	104.9	8	6 10.5 -37.6	104.9	6 10.5 -37.6	104.9	8	6 10.5 -37.6	104.9	8
9	7 23.7 -31.9	104.9	7 08.2 -32.7	105.0	6 52.6 -33.6	105.1	6 36.9 -34.5	105.3	6 21.0 -35.2	105.4	6 05.1 -36.1	105.5	5 49.0 -36.8	105.6	5 32.9 -37.7	105.7	9	5 32.9 -37.7	105.7	5 32.9 -37.7	105.7	9	5 32.9 -37.7	105.7	9
10	6 51.8 -32.0	105.8	6 35.5 -32.8	105.9	6 19.0 -33.7	106.0	6 02.4 -34.5	106.1	5 45.8 -35.4	106.2	5 29.0 -36.1	106.3	5 12.2 -37.0	106.4	4 55.2 -37.7	106.4	10	4 55.2 -37.7	106.4	4 55.2 -37.7	106.4	10	4 55.2 -37.7	106.4	10
11	6 19.8 -32.1	106.6	6 02.6 -32.9	106.7	5 45.3 -33.8	106.8	5 27.9 -34.6	106.9	5 10.4 -35.4	107.0	4 52.9 -36.3	107.1	4 35.2 -37.0	107.2	4 17.5 -37.8	107.2	11	4 17.5 -37.8	107.2	4 17.5 -37.8	107.2	11	4 17.5 -37.8	107.2	11
12	5 47.7 -32.1	107.5	5 29.7 -33.0	107.5	5 11.5 -33.8	107.6	4 53.3 -34.6	107.7	4 35.0 -35.4	107.8	4 16.6 -36.2	107.9	3 58.2 -37.0	107.9	3 39.7 -37.8	108.0	12	3 39.7 -37.8	108.0	3 39.7 -37.8	108.0	12	3 39.7 -37.8	108.0	12
13	5 15.6 -32.3	108.3	4 56.7 -33.1	108.4	4 37.7 -33.9	108.5	4 18.7 -34.7	108.5	3 59.6 -35.5	108.6	3 40.4 -36.3	108.7	3 21.2 -37.1	108.7	3 01.9 -37.9	108.8	13	3 01.9 -37.9	108.8	3 01.9 -37.9	108.8	13	3 01.9 -37.9	108.8	13
14	4 43.3 -32.3	109.1	4 23.6 -33.1	109.2	4 03.8 -33.9	109.3	3 44.0 -34.8	109.4	3 24.1 -35.6	109.4	3 04.1 -36.3	109.5	2 44.1 -37.1	109.5	2 24.0 -37.9	109.6	14	2 24.0 -37.9	109.6	2 24.0 -37.9	109.6	14	2 24.0 -37.9	109.6	14
15	4 11.0 -32.3	110.0	3 50.5 -33.2	110.1	3 29.9 -34.0	110.1	3 09.2 -34.8	110.2	2 48.5 -35.6	110.2	2 27.8 -36.4	110.3	2 07.0 -37.2	110.3	1 46.1 -37.9	110.3	15	1 46.1 -37.9	110.3	1 46.1 -37.9	110.3	15	1 46.1 -37.9	110.3	15
16	3 38.7 -32.4	110.8	3 17.3 -33.2	110.9	2 55.9 -34.0	110.9	2 34.4 -34.8	110.9	2 12.9 -35.6	110.9	1 51.4 -36.4	111.1	1 29.8 -37.1	111.1	1 08.2 -37.9	111.1	16	1 08.2 -37.9	111.1	1 08.2 -37.9	111.1	16	1 08.2 -37.9	111.1	16
17	3 06.3 -32.4	111.7	2 44.1 -33.2	111.7	2 21.9 -34.1	111.8	1 59.6 -34.8	111.8	1 37.3 -35.6	111.8	1 15.0 -36.4	111.9	0 52.7 -37.2	111.9	0 30.3 -37.9	111.9	17	0 30.3 -37.9	111.9	0 30.3 -37.9	111.9	17	0 30.3 -37.9	111.9	17
18	2 33.9 -32.5	112.5	2 10.9 -33.3	112.6	1 47.8 -34.0	112.6	1 24.8 -34.9	112.6	1 01.7 -35.6	112.6	0 38.6 -36.4	112.6	0 15.5 -37.2	112.7	0 0.2 -36.4	113.4	18	0 0.2 -36.4	113.4	0 0.2 -36.4	113.4	18	0 0.2 -36.4	113.4	18
19	2 01.4 -32.5	113.4	1 37.6 -33.3	113.4	0 49.9 -34.8	113.4	0 26.1 -35.7	113.4	0 0.2 -36.4	113.4	0 21.7 +37.2	66.6	0 45.6 -37.9	66.6	0 45.6 -37.9	66.6	19	0 45.6 -37.9	66.6	0 45.6 -37.9	66.6	19	0 45.6 -37.9	66.6	19
20	1 28.9 -32.5	114.2	1 04.3 -33.3	114.2	0 39.7 -34.1	114.2	0 15.1 -34.9	114.2	0 0.96 +35.6	65.8	0 34.2 +36.4	65.8	0 58.9 +37.1	65.8	1 23.5 +37.9	65.8	20	1 23.5 +37.9	65.8	1 23.5 +37.9	65.8	20	1 23.5 +37.9	65.8	20
21	0 56.4 -32.5	115.0	0 31.0 -33.3	115.1	0 0.56 -34.1	115.1	0 19.8 +34.9	64.9	0 45.2 +35.7	64.9	1 10.6 +36.4	65.0	1 36.0 +37.1	65.0	2 01.4 +37.8	65.0	21	2 01.4 +37.8	65.0	2 01.4 +37.8	65.0	21	2 01.4 +37.8	65.0	21
22	0 23.9 -32.5	115.9	0 0.23 +33.3	64.1	0 28.5 +34.1	64.1	0 54.7 +34.8	64.1	1 20.9 +35.6	64.1	1 47.0 +36.4	64.2	2 13.1 +37.2	64.2	2 39.2 +37.9	64.2	22	2 39.2 +37.9	64.2	2 39.2 +37.9	64.2	22	2 39.2 +37.9	64.2	22
23	0 08.6 +32.6	63.3	0 35.6 +33.3	63.3	1 02.6 +34.1	63.3	1 29.5 +34.9	63.3	1 56.5 +35.6	63.3	2 23.4 +36.3	63.4	2 50.3 +37.0	63.4	3 17.1 +37.8	63.5	23	3 17.1 +37.8	63.5	3 17.1 +37.8	63.5	23	3 17.1 +37.8	63.5	23
24	0 41.2 +32.5	62.4	1 08.9 +33.3	62.4	1 36.7 +34.0	62.5	2 04.4 +34.8	62.5	2 32.1 +35.5	62.5	2 59.7 +36.3	62.6	3 27.3 +37.1	62.6	3 54.9 +37.8	62.7	24	3 54.9 +37.8	62.7	3 54.9 +37.8	62.7	24	3 54.9 +37.8	62.7	24
25	1 13.7 +32.5	61.6	1 42.2 +33.3	61.6	2 10.7 +34.0	61.6	2 39.2 +34.8	61.7	3 07.6 +35.6	61.7	3 36.0 +36.3	61.8	4 04.4 +37.0	61.8	4 32.7 +37.7	61.9	25	4 32.7 +37.7	61.9	4 32.7 +37.7	61.9	25	4 32.7 +37.7	61.9	25
26	1 46.2 +32.4	60.8	2 15.5 +33.2	60.8	2 44.7 +34.0	60.8	3 14.0 +34.7	60.9	3 43.2 +35.4	60.9	4 12.3 +36.2	61.0	4 41.4 +36.9	61.0	5 10.4 -37.0	61.1	26	5 10.4 -37.0	61.1	5 10.4 -37.0	61.1	26	5 10.4 -37.0	61.1	26
27	2 18.6 +32.5	59.9	2 48.7 +33.2	59.9	3 18.7 +34.0	60.0	3 48.7 +34.7	60.0	4 18.6 +35.5	60.1	4 48.5 +36.2	60.2	5 18.3 +36.9	60.3	5 48.0 +37.6	60.3	27	5 48.0 +37.6	60.3	5 48.0 +37.6	60.3	27	5 48.0 +37.6	60.3	27
28	2 51.1 +32.4	59.1	3 21.9 +33.2	59.1	3 21.9 +33.2	59.1	4 23.4 +34.7	59.2	5 24.4 +35.3	59.3	6 24.7 +36.1	59.4	7 24.7 +36.9	59.5	8 24.7 +37.6	59.6	28	8 24.7 +37.6	59.6	8 24.7 +37.6	59.6	28	8 24.7 +37.6	59.6	28
29	3 23.7 +32.4	58.2	4 18.0 +31.8	58.2	4 28.4 +33.0	58.2	5 07.9 +33.7	58.9	6 14.6 +34.3	59.0	7 04.0 +35.1	59.1	8 04.0 +35.2	59.2	9 11.2 +35.9	59.3	29	9 11.2 +35.9	59.3	9 11.2 +35.9	59.3	29	9 11.2 +35.9	59.3	29
30	3 15.2 +32.4	57.3	4 10.8 +30.3	57.3	4 54.4 +30.9	40.4	5 10.0 +31.5	40.4	6 16.4 +32.5	40.6	7 25.5 +32.1	40.8	8 10.8 +32.7	41.0	18 56.0 +33.3	41.3	30	18 56.0 +33.3	41.3	18 56.0 +33.3	41.3	30	18 56.0 +33.3	41.3	30
31	3 12.5 +30.9	56.2	3 19.0 +30.1</td																						

77°, 283° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.			
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.			
0	11 14.0 +30.5	96.6	11 07.0 +31.5	96.8	10 59.9 +32.3	97.0	10 52.5 +33.2	97.2	10 44.9 +34.1	97.4	10 37.1 +35.0	97.5	10 29.1 +35.8	97.7	10 21.0 +36.6	97.9	10 13.0 +37.4	98.1	10 2.0 +38.2	98.3	0	0	0	0				
1	11 44.5 +30.4	95.7	11 38.5 +31.2	95.9	11 32.2 +32.1	96.1	11 25.7 +33.0	96.3	11 19.0 +33.9	96.5	11 12.1 +34.8	96.7	11 04.9 +35.7	96.9	10 57.6 +36.5	97.1	10 50.4 +37.5	97.3	10 43.2 +38.4	97.5	10 36.0 +39.3	97.7	1	1	1	1		
2	12 14.9 +30.2	94.8	12 09.7 +31.1	95.0	12 04.3 +32.0	95.3	11 58.7 +32.9	95.5	11 52.9 +33.8	95.7	11 46.9 +34.6	95.9	11 40.6 +35.5	96.1	11 34.1 +36.4	96.3	11 27.6 +37.3	96.5	11 21.1 +38.2	96.7	11 14.6 +39.1	96.9	2	2	2	2		
3	12 45.1 +30.0	93.9	12 40.8 +30.9	94.2	12 36.3 +31.9	94.4	12 31.6 +32.8	94.6	12 26.7 +33.6	94.8	12 21.5 +34.5	95.0	12 16.1 +35.4	95.3	12 10.5 +36.3	95.5	12 5.1 +37.2	95.7	12 46.8 +36.0	94.7	12 41.3 +37.0	94.9	3	3	3	3		
4	13 15.1 +29.8	93.0	13 11.7 +30.8	93.3	13 08.2 +31.6	93.5	13 04.4 +32.5	93.8	13 00.3 +33.5	94.0	12 56.0 +34.4	94.2	12 51.5 +35.2	94.4	12 46.8 +36.0	94.7	12 41.3 +37.0	94.9	12 36.0 +38.8	95.1	12 30.8 +39.6	95.3	4	4	4	4		
5	13 44.9 +29.6	92.2	13 42.5 +30.5	92.4	13 39.8 +31.3	92.6	13 36.9 +32.4	92.9	13 33.8 +33.3	93.1	13 30.4 +34.2	93.4	13 26.7 +35.1	93.6	13 22.8 +36.0	93.8	13 19.1 +36.8	94.0	13 15.4 +37.6	94.2	13 12.1 +38.4	94.4	5	5	5	5		
6	14 14.5 +29.4	91.3	14 13.0 +30.4	91.5	14 11.3 +31.3	91.8	14 09.3 +32.2	92.0	14 07.1 +33.1	92.3	14 04.6 +34.0	92.5	14 01.8 +34.9	92.8	13 58.8 +35.7	93.0	13 55.7 +36.5	93.2	13 52.6 +37.3	93.4	13 49.5 +38.1	93.6	6	6	6	6		
7	14 43.9 +29.2	90.4	14 43.4 +30.1	90.6	14 42.6 +31.1	90.9	14 41.5 +32.0	91.1	14 40.2 +32.9	91.4	14 38.6 +33.8	91.7	14 36.7 +34.7	91.9	14 34.5 +35.6	92.2	14 32.3 +36.4	92.4	14 30.1 +37.2	92.6	14 28.0 +38.0	92.8	7	7	7	7		
8	15 13.1 +29.0	89.5	15 13.5 +30.0	89.7	15 13.7 +30.9	90.0	15 13.5 +31.8	90.3	15 13.1 +32.7	90.5	15 12.4 +33.6	90.8	15 11.4 +34.5	91.1	15 10.1 +35.4	91.4	15 8.9 +36.3	91.7	15 7.5 +37.1	91.9	15 6.1 +38.0	92.2	8	8	8	8		
9	15 42.1 +28.8	88.5	15 43.5 +29.7	88.8	15 44.6 +30.6	89.1	15 45.3 +31.6	89.4	15 45.8 +32.5	89.7	15 46.0 +33.4	90.0	15 45.9 +34.3	90.2	15 45.5 +35.2	90.5	15 44.1 +36.0	90.7	15 42.7 +36.8	90.9	15 41.3 +37.6	91.1	9	9	9	9		
10	16 10.9 +28.5	87.6	16 13.2 +29.5	87.9	16 15.2 +30.5	88.2	16 16.9 +31.4	88.5	16 18.3 +32.3	88.8	16 19.4 +33.3	89.1	16 20.2 +34.2	89.4	16 20.7 +35.0	89.7	16 20.2 +35.8	90.0	16 20.7 +36.6	90.3	16 20.2 +37.4	90.6	10	10	10	10		
11	16 39.4 +28.3	86.7	16 42.7 +29.2	87.0	16 45.7 +30.1	87.3	16 48.3 +31.1	87.6	16 50.6 +32.1	87.9	16 52.7 +32.9	88.2	16 54.4 +33.8	88.5	16 55.7 +34.8	88.8	16 55.7 +35.7	89.1	16 55.7 +36.5	89.4	16 55.7 +37.3	89.7	11	11	11	11		
12	17 07.7 +28.0	85.8	17 11.9 +29.0	86.1	17 15.8 +30.0	86.4	17 19.4 +30.9	86.7	17 22.7 +31.8	87.0	17 25.6 +32.8	87.4	17 28.2 +33.7	87.7	17 30.5 +34.6	88.0	17 30.5 +35.4	88.3	17 30.5 +36.3	88.6	17 30.5 +37.1	88.9	12	12	12	12		
13	17 35.7 +27.8	84.9	17 40.9 +28.8	85.2	17 45.8 +29.7	85.5	17 50.3 +30.7	85.8	17 54.5 +31.6	86.1	17 58.4 +32.5	86.5	18 01.9 +33.5	86.8	18 05.1 +34.3	87.1	18 08.4 +35.1	87.4	18 11.6 +35.9	87.7	18 14.4 +36.7	88.0	13	13	13	13		
14	18 03.5 +27.5	83.9	18 09.7 +28.5	84.3	18 15.5 +29.4	84.6	18 21.0 +30.4	84.9	18 26.1 +31.4	85.3	18 30.9 +32.3	85.6	18 35.4 +33.1	85.9	18 39.4 +34.2	86.3	18 43.4 +35.0	86.6	18 47.4 +35.8	86.9	18 51.4 +36.6	87.2	14	14	14	14		
15	18 31.0 +27.2	83.0	18 38.2 +28.2	83.3	18 44.9 +29.2	83.7	18 51.4 +30.1	84.0	18 57.5 +31.0	84.4	19 03.2 +32.0	84.7	19 08.5 +33.0	85.0	19 13.6 +33.8	85.4	19 18.7 +34.6	85.8	19 23.8 +35.4	86.2	19 28.8 +36.2	86.6	15	15	15	15		
16	18 58.2 +27.0	82.1	19 06.4 +27.9	82.4	19 14.1 +28.9	82.7	19 21.5 +29.8	83.1	19 28.5 +30.8	83.4	19 35.2 +31.7	83.8	19 41.5 +32.7	84.2	19 47.4 +33.6	84.5	19 53.3 +34.5	84.8	19 59.2 +35.4	85.1	19 65.1 +36.3	85.4	16	16	16	16		
17	19 25.2 +26.6	81.1	19 34.3 +27.6	81.5	19 43.0 +28.6	81.8	19 51.3 +29.6	82.2	19 59.3 +30.5	82.5	20 06.9 +31.5	82.9	20 14.2 +32.4	83.3	20 21.0 +33.3	83.6	20 28.0 +34.2	83.9	20 43.3 +35.1	84.2	20 54.3 +36.0	84.5	17	17	17	17		
18	19 51.8 +26.4	80.2	20 01.9 +27.3	80.5	20 11.6 +28.3	80.9	20 20.9 +29.3	81.2	20 29.8 +30.3	81.6	20 38.4 +31.2	82.0	20 46.6 +32.1	82.4	20 54.3 +33.0	82.8	20 62.1 +33.9	83.2	20 70.0 +34.8	83.6	20 77.8 +35.6	83.8	18	18	18	18		
19	20 18.2 +26.0	79.2	20 29.2 +27.0	79.6	20 39.9 +28.0	79.9	20 50.2 +28.9	80.3	21 00.1 +29.9	80.7	21 09.6 +30.4	81.1	21 18.7 +31.8	81.5	21 27.4 +32.8	81.8	21 36.1 +33.7	82.1	21 44.8 +34.6	82.5	21 53.4 +35.4	82.8	19	19	19	19		
20	20 44.2 +25.7	78.2	20 56.2 +26.7	78.6	21 07.9 +27.7	79.0	21 19.1 +28.7	79.4	21 30.0 +29.6	79.8	21 40.5 +30.5	80.2	21 50.5 +31.5	80.5	22 00.2 +32.4	80.9	22 10.1 +33.3	81.2	22 20.0 +34.2	81.5	22 30.6 +35.1	81.8	20	20	20	20		
21	21 09.9 +25.4	77.3	21 22.9 +26.4	77.7	21 35.6 +27.3	78.0	21 47.8 +28.3	78.4	21 59.6 +29.3	78.8	22 11.0 +30.3	79.2	22 22.0 +31.3	79.6	22 32.6 +32.2	80.0	22 42.1 +33.1	80.4	22 52.0 +34.0	80.8	22 62.0 +34.9	81.2	21	21	21	21		
22	21 35.3 +25.0	76.3	21 49.3 +26.0	76.7	22 02.9 +27.0	77.1	22 16.1 +28.0	77.5	22 28.9 +29.0	77.9	22 41.3 +29.9	78.3	22 53.3 +30.9	78.7	23 04.8 +31.8	79.1	23 16.3 +32.6	79.5	23 26.6 +33.5	79.9	23 36.0 +34.4	80.3	22	22	22	22		
23	22 00.3 +24.7	75.3	22 15.3 +25.7	75.7	22 29.9 +26.7	76.1	22 44.1 +27.6	76.5	22 57.9 +28.6	76.9	23 11.2 +29.6	77.4	23 24.2 +30.5	77.8	23 36.6 +31.6	78.2	23 46.7 +32.5	78.6	23 56.7 +33.4	79.0	23 66.7 +34.3	79.4	22	22	22	22		
24	22 25.0 +24.3	74.3	22 41.0 +25.3	74.7	22 56.6 +26.3	75.1	23 11.7 +27.3	75.6	23 26.5 +28.3	76.0	23 40.8 +29.3	76.4	23 54.7 +30.2	76.8	24 08.2 +31.1	77.3	24 18.7 +32.0	77.7	24 28.2 +32.9	78.1	24 38.0 +33.8	78.5	24	24	24	24		
25	22 49.3 +24.0	73.4	23 06.3 +25.0	73.8	23 22.9 +25.9	74.2	23 39.0 +27.0	74.6	23 54.8 +27.9	75.0	24 10.1 +28.8	75.4	24 24.9 +29.9	75.9	24 39.3 +30.8	76.3	24 53.7 +31.7	77.1	24 63.7 +32.6	77.5	24 73.7 +33.5	78.0	25	25	25	25		
26	23 13.3 +23.5	72.4	23 31.3 +24.5	72.8	23 48.8 +25.6	73.2	24 06.0 +26.5	73.6	24 22.7 +27.5	74.0	24 38.9 +28.6	74.5	24 54.8 +29.5	75.4	25 04.1 +30.5	76.0	25 14.0 +31.4	76.6	25 24.0 +32.3	77.1	25 33.7 +33.2	77.6	26	26	26	26		
27	23 36.8 +23.2	71.4	23 55.8 +24.2	71.8	24 14.4 +25.2	72.2	24 32.5 +26.2	72.6	24 50.2 +27.2	73.1	25 07.5 +28.1	73.5	25 23.5 +29.1	74.0	25 40.6 +30.1	74.4	25 50.6 +31.0	74.8	25 59.6 +31.9	75.2	25 68.6 +32.8	75.6	26	26	26	26		
28	24 00.0 +22.8	70.3	24 20.0 +23.8	70.8	24 39.6 +24.7	71.2	24 58.7 +25.7	71.6	25 17.4 +26.7	72.1	25 35.6 +27.7	72.5	25 53.4 +28.7	73.0	26 10.7 +29.7	73.5	26 18.7 +30.6	74.0	26 26.7 +31.5	74.4	26 34.7 +32.4	74.8	27	27	27	27		
29	24 22.8 +22.4	69.3	24 43.8 +23.4	69.8	25 04.3 +24.4	70.2	25 24.4 +25.4	70.6	25 51.0 +26.4	71.1	26 10.5 +27.4	71.5	26 30.7 +28.4	72.0	26 49.4 +29.3	72.8	26 68.4 +30.2	73.2	26 87.4 +31.1	73.6	26 10.4 +31.9	74.0	26 20.2 +32.8	74.4	27	27	27	27
30	26 30.7 +1																											

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 77° , 283°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	11 14.0 -30.6	96.6	11 07.0 -31.5	96.8	10 59.9 -32.5	97.0	10 52.5 -33.4	97.2	10 44.9 -34.2	97.4	10 37.1 -35.1	97.5	10 29.1 -35.9	97.7	10 21.0 -36.8	97.9	10 13.0 -37.7	101.9	7 16.1 -37.2	101.8	7 10.7 -36.4	98.7	9 44.2 -36.9	98.7	0
1	10 43.4 -30.8	97.5	10 35.5 -31.7	97.6	10 27.4 -32.6	97.8	10 19.1 -33.4	98.0	10 10.7 -34.4	98.2	10 02.0 -35.2	98.4	9 53.2 -36.0	98.5	9 17.2 -36.2	99.4	9 07.3 -36.9	99.5	6 52.0 -36.5	102.6	6 38.9 -37.4	102.7	6 01.5 -37.4	103.5	2
2	10 12.6 -31.0	98.3	10 03.8 -31.9	98.5	9 54.8 -32.7	98.7	9 45.7 -33.6	98.9	9 36.3 -34.4	99.0	9 26.8 -35.3	99.2	9 17.2 -36.2	99.4	9 07.3 -36.9	99.5	8 51.5 -35.4	100.0	8 41.0 -36.2	100.2	8 30.4 -37.1	100.3	3		
3	9 41.6 -31.1	99.2	9 31.9 -31.9	99.4	9 22.1 -32.9	99.5	9 12.1 -33.8	99.7	9 01.9 -34.6	99.9	8 51.1 -35.4	100.0	8 41.0 -36.2	100.2	8 30.4 -37.1	100.3	7 53.3 -37.2	101.1	7	53.3 -37.2	101.1	4			
4	9 10.5 -31.2	100.1	9 00.0 -32.1	100.2	8 49.2 -32.9	100.4	8 38.3 -33.8	100.5	8 27.3 -34.7	100.7	8 16.1 -35.5	100.8	8 04.8 -36.4	101.0	7 53.3 -37.2	101.1	7	53.3 -37.2	101.1	4					
5	8 39.3 -31.3	100.9	8 27.9 -32.2	101.1	8 16.3 -33.1	101.2	8 04.5 -33.9	101.4	7 52.6 -34.8	101.5	7 40.6 -35.6	101.6	7 28.4 -36.4	101.8	7 16.1 -37.2	101.9	5	16.1 -37.2	101.9	5					
6	8 08.0 -31.4	101.8	7 55.7 -32.3	101.9	7 43.2 -33.2	102.1	7 30.6 -34.0	102.2	7 17.8 -34.8	102.3	7 05.0 -35.7	102.5	6 52.0 -36.5	102.6	6 38.9 -37.4	102.7	6	38.9 -37.4	102.7	6					
7	7 36.6 -31.5	102.7	7 23.4 -32.4	102.8	7 10.0 -33.2	102.9	6 56.6 -34.1	103.0	6 43.0 -35.0	103.1	6 29.3 -35.8	103.3	6 15.5 -36.6	103.4	6 01.5 -37.4	103.5	7	54.0 -37.6	103.4	8					
8	7 05.1 -31.7	103.5	6 51.0 -32.5	103.6	6 36.8 -33.4	103.7	6 22.5 -34.2	103.9	6 08.0 -35.0	104.0	5 53.5 -35.8	104.1	5 38.9 -36.7	104.2	5 24.1 -37.4	104.3	8	24.1 -37.4	104.3	8					
9	6 33.4 -31.7	104.4	6 18.5 -32.6	104.5	6 03.4 -33.4	104.6	5 48.3 -34.3	104.7	5 33.0 -35.1	104.8	5 17.7 -35.9	104.9	5 02.2 -36.7	105.0	4 46.7 -37.5	105.0	9	24.1 -37.5	105.0	9					
10	6 01.7 -31.8	105.2	5 45.9 -32.6	105.3	5 30.0 -33.5	105.4	5 14.0 -34.3	105.5	4 57.9 -35.1	105.6	4 41.8 -36.0	105.7	4 25.5 -36.8	105.8	4 09.2 -37.6	105.8	10	25.5 -36.8	105.8	10					
11	5 29.9 -31.8	106.1	5 13.3 -32.7	106.2	4 56.5 -33.5	106.3	4 39.7 -34.4	106.3	4 22.8 -35.2	106.4	4 05.8 -36.0	106.5	3 48.7 -36.8	106.5	3 31.6 -37.6	106.6	11	31.6 -37.6	106.6	11					
12	4 58.1 -31.9	106.9	4 40.6 -32.8	107.0	4 23.0 -33.6	107.1	4 05.3 -34.4	107.2	3 47.6 -35.3	107.2	3 29.8 -36.1	107.3	3 11.9 -36.8	107.3	2 54.0 -37.6	107.4	12	54.0 -37.6	107.4	12					
13	4 26.2 -32.0	107.8	4 07.8 -32.8	107.8	3 49.4 -33.7	107.9	3 30.9 -34.5	108.0	3 12.3 -35.2	108.0	2 53.7 -36.0	108.1	2 35.1 -36.9	108.1	2 16.4 -37.6	108.2	13	16.4 -37.6	108.2	13					
14	3 54.2 -32.1	108.6	3 35.0 -32.9	108.7	3 15.7 -33.7	108.7	2 56.4 -34.5	108.8	2 37.1 -35.3	108.8	2 17.7 -36.1	108.9	1 58.2 -36.9	108.9	1 38.8 -37.7	108.9	14	38.8 -37.7	108.9	14					
15	3 22.1 -32.0	109.5	3 02.1 -32.9	109.5	2 42.0 -33.7	109.6	2 21.9 -34.5	109.6	2 01.8 -35.4	109.7	1 41.6 -36.2	109.7	1 21.3 -36.9	109.7	1 01.1 -37.7	109.7	15	01.1 -37.7	109.7	15					
16	2 50.1 -32.2	110.3	2 29.2 -32.9	110.4	2 08.3 -33.7	110.4	1 47.4 -34.6	110.4	1 26.4 -35.3	110.5	1 05.4 -36.1	110.5	0 44.4 -36.9	110.5	0 23.4 -37.7	110.5	16	23.4 -37.7	110.5	16					
17	2 17.9 -32.1	111.2	1 56.3 -33.0	111.2	1 34.6 -33.8	111.2	1 12.8 -34.6	111.3	0 51.1 -35.4	111.3	0 15.7 -36.4	111.2	0 29.3 -36.2	111.3	0 0.75 -36.9	111.3	17	14.3 -37.6	111.3	17					
18	1 45.8 -32.2	112.0	1 23.3 -33.0	112.0	1 00.8 -33.8	112.1	0 38.2 -34.5	112.1	0 27.0 -33.8	112.9	0 0.37 -34.6	112.9	0 19.7 -35.3	67.1	0 43.0 -36.1	67.1	1 29.6 -37.7	67.2	19						
19	1 13.6 -32.2	112.9	0 50.3 -33.0	112.9	0 27.0 -33.8	112.9	0 0.37 -34.6	112.9	0 19.7 -35.3	67.1	0 43.0 -36.1	67.1	1 29.6 -37.7	67.2	1 29.6 -37.7	67.2	19	29.6 -37.7	67.2	19					
20	0 41.4 -32.2	113.7	0 17.3 -33.0	113.7	0 0.68 +33.8	66.3	0 30.9 +34.6	66.3	0 55.0 +35.4	66.3	1 19.1 +36.2	66.3	1 43.2 +36.9	66.4	2 07.3 +37.6	66.4	20	07.3 +37.6	66.4	20					
21	0 09.2 -32.1	114.5	0 15.7 +33.0	65.5	0 40.6 +33.8	65.5	1 14.4 +33.7	64.6	1 40.1 +34.5	64.7	2 05.7 +35.3	64.7	2 31.4 +36.0	64.7	2 57.0 +36.8	64.8	22	22.5 +37.6	64.8	22					
22	0 22.9 +32.2	64.6	0 48.7 +33.0	64.6	1 48.1 +33.8	63.8	2 14.6 +34.5	63.8	2 41.0 +35.3	63.9	3 07.4 +36.1	63.9	3 33.8 +36.8	64.0	4 00.1 +37.5	64.0	23	0.0.1 +37.5	64.0	23					
23	0 55.1 +32.2	63.8	1 21.7 +32.9	63.8	1 48.1 +33.8	63.8	2 14.6 +34.5	63.8	2 41.0 +35.3	63.9	3 07.4 +36.1	63.9	3 33.8 +36.8	64.0	4 44.9 +37.6	65.6	21	37.6 +37.5	65.6	21					
24	1 27.3 +32.2	62.9	1 54.6 +33.0	63.0	2 21.9 +33.7	63.0	2 49.1 +34.5	63.0	2 05.7 +35.3	63.0	3 16.3 +35.3	63.1	3 43.5 +36.0	63.1	4 10.6 +36.7	63.2	4 37.6 +37.5	63.3	24						
25	1 59.5 +32.1	62.1	2 27.6 +32.9	62.1	2 55.6 +33.7	62.2	3 23.6 +34.4	62.2	3 51.6 +35.1	62.3	4 19.5 +35.9	62.3	4 47.3 +36.7	62.4	5 15.1 +37.4	62.5	25	15.1 +37.4	62.5	25					
26	2 31.6 +32.1	61.2	3 00.5 +32.8	61.3	3 29.3 +33.6	61.3	3 58.0 +34.4	61.4	4 26.7 +35.2	61.5	4 55.4 +35.9	61.5	5 24.0 +36.6	61.6	5 52.5 +37.3	61.7	26	24.0 +36.6	61.7	26					
27	3 03.7 +32.1	60.4	3 33.3 +32.9	60.4	4 02.9 +33.6	60.5	4 32.4 +34.4	60.6	5 01.9 +35.1	60.6	5 31.3 +35.8	60.7	6 00.6 +36.5	60.8	6 29.8 +37.3	60.9	27	29.8 +37.3	60.9	27					
28	3 35.8 +32.0	59.5	4 06.2 +32.7	59.6	4 36.5 +33.5	59.7	5 06.8 +34.2	59.7	5 37.0 +35.0	59.8	6 07.1 +35.7	59.9	6 37.1 +36.5	60.0	7 07.1 +37.2	60.1	28	37.1 +37.2	60.1	28					
29	4 07.8 +32.0	58.7	4 38.9 +32.8	58.8	5 10.0 +33.5	58.8	5 41.0 +34.2	58.9	6 12.0 +34.9	59.0	6 42.8 +35.7	59.1	7 13.6 +36.4	59.2	7 44.3 +37.1	59.3	29	44.3 +37.1	59.3	29					
30	4 39.8 +31.9	57.8	5 11.7 +32.6	57.9	5 43.5 +33.4	58.0	6 15.2 +34.2	58.1	6 46.9 +34.9	58.2	7 18.5 +35.6	58.3	7 50.0 +36.3	58.4	8 21.4 +37.0	58.5	30	21.4 +37.0	58.5	30					
31	5 11.7 +31.8	57.0	5 44.3 +32.6	57.1	6 16.9 +33.3	57.2	6 49.4 +34.0	57.3	7 21.8 +34.7	57.4	7 54.1 +35.5	57.5	8 26.3 +36.2	57.6	8 58.4 +36.9	57.7	31	58.4 +36.9	57.7	31					
32	5 43.5 +31.7	56.1	6 16.9 +32.5	56.2	6 50.2 +33.2	56.3	7 23.4 +33.9	56.4	7 56.5 +34.7	56.5	8 29.6 +35.3	56.7	9 02.5 +36.1	56.8	9 35.3 +36.8	56.9	32	35.3 +36.8	56.9	32					
33	6 15.2 +31.7	55.3	6 49.4 +32.4	55.4	7 23.4 +33.1	55.5	7 57.3 +33.9	55.6	8 31.2 +34.6	55.7	9 04.9 +35.3	55.8	9 38.6 +35.9	56.0	10 12.1 +36.6	56.1	33	12.1 +36.6	56.1	33					
34	6 46.9 +31.6	54.4	7 21.8 +32.3	54.5	7 56.5 +33.1	54.6	8 31.2 +33.7	54.8	9 05.8 +34.4	54.9	9 40.2 +35.2	55.0	10 14.5 +35.9	55.2	10 48.7 +36.6	55.3	34	48.7 +36.6	55.3	34					
35	7 18.5 +31.5	53.6	7 54.1 +32.2	53.7	8 29.6 +32.9	53.8	9 04.9 +33.7	53.9	9 40.2 +34.3	54.1	10 15.4 +35.0	54.2	10 50.4 +35.7	54.4	11 25.3 +36.4	54.5	35	25.3 +36.4	54.5	35					
36	7 50.0 +31.4	52.7	8 26.3 +32.1	52.8	9 02.5 +32.8	53.0	9 38.6 +33.5	53.1	10 14.5 +34.2	53.2	10 50.4 +34.9	53.3	11 26.1 +35.6	53.5	12 01.7 +36.3	53.7	36	01.7 +36.3	53.7	36					
37	8 21.4 +31.2	51.9	8 58.4 +31.9	52.0	9 35.3 +32.6	52.1	10 12.1 +33.4	52.2	10 48.7 +34.1	52.4	11 25.3 +34.7	52.6	12 01.7 +35.4	52.7	12 38										

78°, 282° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	10 22.4 + 30.4	96.1	10 15.9 + 31.4	96.2	10 09.3 + 32.3	96.4	10 02.5 + 33.1	96.6	9 55.5 + 34.0	96.8	9 48.4 + 34.8	97.0	9 41.0 + 35.7	97.1	9 33.5 + 36.5	97.3	0	10 16.7 + 35.6	96.3	10 10.0 + 36.5	96.5	1			
1	10 52.8 + 30.3	95.2	10 47.3 + 31.2	95.4	10 41.6 + 32.1	95.6	10 35.6 + 33.0	95.8	10 29.5 + 33.9	95.9	10 23.2 + 34.8	96.1	10 16.7 + 35.6	96.3	10 10.0 + 36.5	96.5	1	10 52.3 + 35.5	95.5	10 46.5 + 36.3	95.7	2			
2	11 23.1 + 30.1	94.3	11 18.5 + 31.0	94.5	11 13.7 + 31.9	94.7	11 08.6 + 32.9	94.9	11 03.4 + 33.7	95.1	10 58.0 + 34.6	95.3	10 52.3 + 35.5	95.5	10 46.5 + 36.3	95.7	2	11 27.8 + 35.3	94.7	11 22.8 + 36.2	94.9	3			
3	11 53.2 + 30.0	93.4	11 49.5 + 30.9	93.6	11 45.6 + 31.8	93.8	11 41.5 + 32.7	94.1	11 37.1 + 33.6	94.3	11 32.6 + 34.5	94.5	11 27.8 + 35.3	94.7	11 22.8 + 36.2	94.9	3	12 14.2 + 32.5	93.2	12 10.7 + 33.4	93.4	4			
4	12 23.2 + 29.7	92.5	12 20.4 + 30.7	92.8	12 17.4 + 31.6	93.0	12 14.2 + 32.5	93.2	12 10.7 + 33.4	93.4	12 07.0 + 34.3	93.6	12 03.1 + 35.2	93.8	11 59.0 + 36.0	94.1	4	12 46.7 + 32.3	92.3	12 44.1 + 33.3	92.6	5			
5	12 52.9 + 29.6	91.7	12 51.1 + 30.5	91.9	12 49.0 + 31.5	92.1	12 46.7 + 32.3	92.3	12 44.1 + 33.3	92.6	12 41.3 + 34.2	92.8	12 38.3 + 35.0	93.0	12 35.0 + 35.9	93.2	5	13 19.0 + 32.2	91.5	13 17.4 + 33.1	91.7	6			
6	13 22.5 + 29.5	90.8	13 21.6 + 30.4	91.0	13 20.5 + 31.2	91.2	13 19.0 + 32.2	91.5	13 17.4 + 33.1	91.7	13 15.5 + 34.0	91.9	13 13.3 + 34.9	92.2	13 10.9 + 35.7	92.4	6	13 52.0 + 30.1	90.1	13 51.2 + 32.0	90.6	7			
7	13 52.0 + 29.2	89.9	13 52.0 + 30.1	90.1	13 51.7 + 31.1	90.4	13 51.2 + 32.0	90.6	13 50.5 + 32.9	90.8	13 49.5 + 33.8	91.1	13 48.2 + 34.7	91.3	13 46.6 + 35.6	91.6	7	14 22.1 + 30.0	89.0	14 22.8 + 30.9	89.5	8			
8	14 21.2 + 29.0	89.0	14 22.1 + 30.0	89.2	14 22.8 + 30.9	89.5	14 23.2 + 31.8	89.7	14 23.4 + 32.7	90.0	14 23.3 + 33.6	90.2	14 22.9 + 34.5	90.5	14 22.2 + 35.4	90.8	8	14 50.2 + 28.8	88.1	14 52.1 + 29.7	88.3	9			
9	14 50.2 + 28.8	88.1	14 52.1 + 29.7	88.3	14 53.7 + 30.7	88.6	14 55.0 + 31.6	88.9	14 56.1 + 32.5	89.1	14 56.9 + 33.4	89.4	14 57.4 + 34.3	89.7	14 57.6 + 35.2	89.9	9	15 19.0 + 28.5	87.1	15 21.8 + 29.5	87.4	10			
10	15 19.0 + 28.5	87.1	15 21.8 + 29.5	87.4	15 24.4 + 30.4	87.7	15 26.6 + 31.4	88.0	15 28.6 + 32.3	88.2	15 30.3 + 33.2	88.5	15 31.7 + 34.1	88.8	15 32.8 + 35.0	89.1	10	15 54.8 + 30.3	86.8	15 58.0 + 31.2	87.1	11			
11	15 47.5 + 28.4	86.2	15 51.3 + 29.3	86.5	15 54.8 + 30.3	86.8	16 00.9 + 31.2	87.1	16 03.5 + 33.1	87.7	16 05.8 + 34.0	87.9	16 07.8 + 34.8	88.2	16 08.8 + 34.8	88.2	11	16 19.2 + 30.1	85.9	16 29.2 + 31.0	86.2	12			
12	16 15.9 + 28.1	85.3	16 20.6 + 29.1	85.6	16 25.1 + 30.0	85.9	16 29.2 + 31.0	86.2	16 33.0 + 31.9	86.5	16 36.6 + 32.8	86.8	16 39.8 + 33.7	87.1	16 42.6 + 34.7	87.4	12	16 44.0 + 27.9	84.4	16 49.7 + 28.8	84.7	13			
13	16 44.0 + 27.9	84.4	16 49.7 + 28.8	84.7	16 55.1 + 29.8	85.0	17 00.2 + 30.7	85.3	17 04.9 + 31.7	85.6	17 09.4 + 32.5	85.9	17 13.5 + 33.5	86.2	17 17.3 + 34.3	86.5	13	17 11.9 + 27.6	83.5	17 18.5 + 28.6	83.8	14			
14	17 11.9 + 27.6	83.5	17 18.5 + 28.6	83.8	17 24.9 + 29.5	84.1	17 30.9 + 30.5	84.4	17 36.6 + 31.4	84.7	17 41.9 + 32.4	85.0	17 47.0 + 33.2	85.4	17 51.6 + 34.2	85.7	14	17 47.1 + 28.3	82.5	17 54.1 + 29.3	82.8	15			
15	17 39.5 + 27.3	82.5	17 47.1 + 28.3	82.9	17 54.4 + 29.3	83.2	18 01.4 + 30.2	83.5	18 08.0 + 31.1	83.8	18 14.3 + 32.1	84.1	18 20.2 + 33.0	84.5	18 25.8 + 33.9	84.8	15	18 23.7 + 29.0	82.3	18 31.6 + 29.9	82.6	16			
16	18 06.8 + 27.1	81.6	18 15.4 + 28.0	81.9	18 23.7 + 29.0	82.3	18 31.6 + 29.9	82.6	18 39.1 + 30.9	82.9	18 46.4 + 31.8	83.3	18 53.2 + 32.8	83.6	18 59.7 + 33.7	83.9	16	19 01.5 + 29.7	81.7	19 10.0 + 30.7	82.0	17			
17	18 33.9 + 26.8	80.7	18 43.4 + 27.8	81.0	18 52.7 + 28.7	81.3	19 01.5 + 29.7	81.7	19 10.0 + 30.7	82.0	19 18.2 + 31.6	82.4	19 26.0 + 32.5	82.7	19 33.4 + 33.4	83.1	17	19 11.2 + 27.5	79.7	19 21.4 + 28.4	80.4	18			
18	19 00.7 + 26.5	79.7	19 11.2 + 27.5	80.1	19 21.4 + 28.4	80.4	19 31.2 + 29.4	80.8	19 40.7 + 30.3	81.1	19 49.8 + 31.3	81.5	19 58.5 + 32.2	81.8	20 06.8 + 33.2	82.2	18	19 38.7 + 27.2	78.8	19 48.9 + 28.2	79.5	19			
19	19 27.2 + 26.2	78.8	19 38.7 + 27.2	79.1	19 48.9 + 28.2	79.5	20 00.6 + 29.1	79.8	20 11.0 + 30.1	80.2	20 21.1 + 31.0	80.6	20 30.7 + 32.0	80.9	20 40.0 + 32.9	81.3	19	20 05.9 + 26.8	78.2	20 18.0 + 27.8	78.5	20			
20	19 53.4 + 25.9	77.8	20 05.9 + 26.8	78.2	20 18.0 + 27.8	78.5	20 29.7 + 28.8	78.9	20 41.1 + 29.8	79.3	20 52.1 + 30.7	79.6	21 02.7 + 31.6	80.0	21 12.9 + 32.6	80.4	20	20 32.7 + 26.6	77.6	20 45.8 + 27.6	77.6	21			
21	20 19.3 + 25.5	76.9	20 32.7 + 26.6	77.2	20 45.8 + 27.6	77.6	20 58.5 + 28.5	78.0	21 10.9 + 29.4	78.3	21 22.8 + 30.4	78.7	21 34.3 + 31.4	79.1	21 45.5 + 32.3	79.5	21	21 27.0 + 26.5	76.3	21 40.3 + 27.2	77.4	22			
22	20 44.8 + 25.3	75.9	20 59.3 + 26.2	76.3	21 13.4 + 27.2	76.6	21 27.0 + 28.2	77.0	21 40.3 + 29.2	77.4	21 53.2 + 30.1	77.8	22 05.7 + 31.1	78.2	22 17.8 + 32.0	78.6	22	21 10.1 + 24.9	74.9	21 25.5 + 25.9	75.7	23			
23	21 10.1 + 24.9	74.9	21 25.5 + 25.9	75.3	21 40.6 + 26.8	75.7	21 55.2 + 27.9	76.1	22 09.5 + 28.8	76.5	22 23.3 + 29.8	76.9	22 36.8 + 30.7	77.3	22 49.8 + 31.7	77.7	23	21 50.0 + 24.6	73.9	21 54.1 + 25.6	75.1	24			
24	21 59.6 + 24.2	73.0	22 17.0 + 25.2	73.3	22 34.0 + 26.2	73.7	22 50.6 + 27.1	74.1	23 06.8 + 28.1	74.6	23 22.5 + 29.1	75.0	23 37.9 + 30.1	75.4	23 52.8 + 31.0	75.8	25	21 23.7 + 25.9	72.0	22 42.2 + 24.8	72.4	26			
25	21 59.6 + 24.2	73.0	22 34.0 + 26.2	73.7	23 17.7 + 26.8	73.2	23 34.9 + 27.8	73.6	23 51.6 + 28.8	74.0	24 08.0 + 29.7	74.4	24 23.8 + 30.7	74.9	24 39.8 + 31.7	75.6	27	21 59.6 + 24.2	72.0	22 47.7 + 25.3	72.4	28			
26	22 23.8 + 23.9	72.0	22 42.2 + 24.8	72.4	23 00.2 + 25.8	72.8	23 17.7 + 26.8	73.2	23 34.9 + 27.8	73.6	23 51.6 + 28.8	74.0	24 08.0 + 29.7	74.4	24 23.8 + 30.7	74.9	26	21 50.5 + 22.6	71.8	22 47.7 + 25.3	72.2	27			
27	22 47.7 + 23.5	71.0	23 07.0 + 24.5	71.4	23 26.0 + 25.4	71.8	23 44.5 + 26.5	72.2	24 02.7 + 27.4	72.6	24 20.4 + 28.4	73.0	24 37.7 + 29.3	73.5	24 54.5 + 30.3	73.9	27	21 12.2 + 23.1	70.0	21 24.7 + 23.6	70.4	28			
28	23 11.2 + 23.1	70.0	23 31.5 + 24.1	70.4	23 51.4 + 25.1	70.8	24 11.0 + 26.0	71.2	24 30.1 + 27.0	71.6	24 48.8 + 28.0	72.1	25 07.0 + 29.0	72.5	25 24.8 + 29.9	73.0	28	21 12.2 + 23.1	69.0	21 24.3 + 23.7	70.4	29			
29	23 34.3 + 22.7	69.0	23 55.6 + 23.7	69.4	24 16.5 + 24.7	69.8	24 37.0 + 25.7	70.2	24 57.1 + 26.7	70.7	25 16.8 + 27.6	71.1	25 36.0 + 28.6	71.6	25 54.7 + 29.6	72.0	29	21 11.6 + 22.3	68.0	21 23.1 + 23.5	68.4	30			
30	23 16.6 + 22.1	68.0	23 26.8 + 22.1	68.4	24 11.6 + 22.1	68.7	24 38.4 + 22.1	69.1	25 02.7 + 25.3	69.2	25 23.8 + 26.2	69.7	25 44.4 + 27.2	70.1	26 04.6 + 28.1	70.6	26	20.4 + 22.1	67.0	21 24.7 + 23.6	67.4	30			
31	24 19.3 + 21.8	66.9	24 42.6 + 22.9	67.4	25 05.5 + 23.9	67.8	25 28.0 + 24.8	68.2	25 50.0 + 25.8	68.7	26 11.6 + 26.4	69.1	26 32.7 + 27.8	69.6	26 53.4 + 28.8	70.1	31	24 19.3 + 21.8	65.9	24 42.6 + 22.9	66.3	32			
32	24 41.2 + 21.5	65.9	25 05.5 + 22.5	66.3	25 29.4 + 23.4	66.8	25 52.8 + 24.4	67.2	26 15.8 + 25.4	67.7	26 38.4 + 26.8	68.1	27 00.5 + 27.4	68.6	27 22.2 + 28.3	69.1	32	24 23.8 + 21.5	64.9	24 51.3 + 23.6	65.7	33			
33	25 23																								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 78°, 282°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.				
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z					
0	10 22.4 -30.6	96.1	10 15.9 -31.4	96.2	10 09.3 -32.3	96.4	10 02.5 -33.2	96.6	9 55.5 -34.1	96.8	9 48.4 -35.0	97.0	9 41.0 -35.8	97.1	9 33.5 -36.7	97.3	9 25.2 -37.1	101.3	6 29.2 -37.1	101.2	6 20.8 -36.8	98.1	6 13.4 -35.1	97.8	6 05.2 -36.0	97.9	8 56.8 -36.8	98.1	0
1	9 51.8 -30.7	96.9	9 44.5 -31.6	97.1	9 37.0 -32.5	97.3	9 29.3 -33.4	97.4	9 21.4 -34.2	97.6	9 13.4 -35.1	97.8	9 05.2 -36.0	97.9	8 56.8 -36.8	98.1	8 20.0 -36.8	98.9	8 12.4 -35.1	98.7	8 29.2 -36.0	98.7	8 20.0 -36.8	98.9	2 20.0 -36.8	98.9	2		
2	9 21.1 -30.8	97.8	9 12.9 -31.8	98.0	9 04.5 -32.6	98.1	8 55.9 -33.5	98.3	8 47.2 -34.4	98.4	8 38.3 -35.2	98.6	8 30.1 -35.3	99.4	7 53.2 -36.1	99.6	7 43.2 -37.0	99.7	7 17.1 -36.3	100.4	7 06.2 -37.0	100.5	7 06.2 -37.0	100.5	4				
3	8 50.3 -31.0	98.7	8 41.1 -31.8	98.8	8 31.9 -32.8	99.0	8 22.4 -33.6	99.1	8 12.8 -34.4	99.3	8 03.1 -35.3	99.4	7 38.4 -34.6	100.1	7 27.8 -35.4	100.2	7 17.1 -36.3	100.4	7 06.2 -37.0	100.5	7 06.2 -37.0	100.5	4						
4	8 19.3 -31.0	99.5	8 09.3 -31.9	99.7	7 59.1 -32.8	99.8	7 48.8 -33.7	100.0	7 38.4 -34.6	100.1	7 27.8 -35.4	100.2	7 17.1 -36.3	100.4	7 06.2 -37.0	100.5	7 06.2 -37.0	100.5	7 06.2 -37.0	100.5	4								
5	7 48.3 -31.2	100.4	7 37.4 -32.1	100.5	7 26.3 -32.9	100.7	7 15.1 -33.7	100.8	7 03.8 -34.6	100.9	6 52.4 -35.1	101.0	6 40.8 -36.3	101.2	6 29.2 -37.1	101.3	6 29.2 -37.1	101.3	6 29.2 -37.1	101.3	5								
6	7 17.1 -31.3	101.3	7 05.3 -32.1	101.4	6 53.4 -33.0	101.5	6 41.4 -33.9	101.6	6 29.2 -34.7	101.7	6 16.9 -35.5	101.9	6 04.5 -36.3	102.0	5 52.1 -37.2	102.1	5 52.1 -37.2	102.1	5 52.1 -37.2	102.1	6								
7	6 45.8 -31.3	102.1	6 33.2 -32.3	102.2	6 20.4 -33.1	102.4	6 07.5 -34.0	102.5	5 54.5 -34.8	102.6	5 41.4 -35.6	102.7	5 28.2 -36.5	102.8	5 14.9 -37.3	102.9	5 14.9 -37.3	102.9	5 14.9 -37.3	102.9	7								
8	6 14.5 -31.5	103.0	6 00.9 -32.3	103.1	5 47.3 -33.2	103.2	5 33.5 -34.0	103.3	5 19.7 -34.8	103.4	5 05.8 -35.7	103.5	4 51.7 -36.4	103.6	4 37.6 -37.3	103.6	4 37.6 -37.3	103.6	4 37.6 -37.3	103.6	8								
9	5 43.0 -31.5	103.8	5 28.6 -32.3	103.9	5 14.1 -33.2	104.0	4 59.5 -34.0	104.1	4 44.9 -34.9	104.2	4 30.1 -35.7	104.3	4 15.3 -36.6	104.4	4 00.3 -37.3	104.4	4 00.3 -37.3	104.4	4 00.3 -37.3	104.4	9								
10	5 11.5 -31.6	104.7	4 56.3 -32.5	104.8	4 40.9 -33.3	104.9	4 25.5 -34.2	104.9	4 10.0 -35.0	105.0	3 54.4 -35.8	105.1	3 38.7 -36.6	105.2	3 23.0 -37.4	105.2	3 23.0 -37.4	105.2	3 23.0 -37.4	105.2	10								
11	4 39.9 -31.6	105.6	4 23.8 -32.5	105.6	4 07.6 -33.3	105.7	3 51.3 -34.1	105.8	3 35.0 -35.0	105.8	3 18.6 -35.8	105.9	3 02.1 -36.6	105.9	2 45.6 -37.4	106.0	2 45.6 -37.4	106.0	2 45.6 -37.4	106.0	11								
12	4 08.3 -31.7	106.4	3 51.3 -32.5	106.5	3 34.3 -33.4	106.5	3 17.2 -34.2	106.6	3 00.0 -35.0	106.6	2 42.8 -35.9	106.7	2 25.5 -36.6	106.7	2 08.2 -37.4	106.8	2 08.2 -37.4	106.8	2 08.2 -37.4	106.8	12								
13	3 36.6 -31.7	107.3	3 18.8 -32.6	107.3	3 00.9 -33.4	107.4	2 43.0 -34.3	107.4	2 25.0 -35.1	107.5	2 06.9 -35.8	107.5	1 48.9 -36.7	107.5	1 30.8 -37.4	107.6	1 30.8 -37.4	107.6	1 30.8 -37.4	107.6	13								
14	3 04.9 -31.8	108.1	2 46.2 -32.6	108.2	2 27.5 -33.5	108.2	2 08.7 -34.3	108.2	1 49.9 -35.1	108.3	1 31.1 -35.9	108.3	1 12.2 -36.6	108.3	0 53.4 -37.5	108.3	0 53.4 -37.5	108.3	0 53.4 -37.5	108.3	14								
15	2 33.1 -31.8	109.0	2 13.6 -32.7	109.0	1 54.0 -33.5	109.0	1 34.4 -35.1	109.1	1 14.8 -35.1	109.1	0 55.2 -35.9	109.1	0 35.6 -36.7	109.1	0 15.9 -37.5	109.1	0 15.9 -37.5	109.1	0 15.9 -37.5	109.1	15								
16	2 01.3 -31.9	109.8	1 40.9 -32.7	109.8	1 20.5 -33.5	109.9	1 00.1 -34.3	109.9	0 39.7 -35.1	109.9	0 19.3 -35.9	109.9	0 01.1 +36.7	70.1	0 21.6 +37.4	70.1	0 21.6 +37.4	70.1	0 21.6 +37.4	70.1	16								
17	1 29.4 -31.9	110.7	1 08.2 -32.7	110.7	0 47.0 -33.5	110.7	0 25.8 -34.3	110.7	0 04.6 -35.1	110.7	0 16.6 +35.9	69.3	0 37.8 +36.7	69.3	0 59.0 +37.4	69.3	0 59.0 +37.4	69.3	0 59.0 +37.4	69.3	17								
18	0 57.5 -31.8	111.5	0 35.5 -32.7	111.5	0 13.5 -33.5	111.5	0 08.5 +34.3	68.5	0 30.5 +35.1	68.5	0 52.5 +35.9	68.5	1 14.5 +36.6	68.5	1 36.4 +37.5	68.5	1 36.4 +37.5	68.5	1 36.4 +37.5	68.5	18								
19	0 25.7 -31.9	112.3	0 02.8 -32.7	112.4	0 20.0 +33.5	67.6	0 42.8 +34.3	67.6	1 05.6 +35.1	67.7	1 28.4 +35.8	67.7	1 51.1 +36.7	67.7	2 13.9 +37.4	67.8	2 13.9 +37.4	67.8	2 13.9 +37.4	67.8	19								
20	0 06.2 +31.9	66.8	0 29.9 +32.7	66.8	0 53.5 +33.5	66.8	1 17.1 +34.3	66.8	1 40.7 +35.1	66.9	2 04.2 +35.9	66.9	2 27.8 +36.6	66.9	2 51.3 +37.3	67.0	2 51.3 +37.3	67.0	2 51.3 +37.3	67.0	20								
21	0 38.1 +31.9	66.0	1 02.6 +32.6	66.0	1 27.0 +33.5	66.0	1 51.4 +34.2	66.0	2 15.8 +35.0	66.0	2 40.1 +35.8	66.1	3 04.4 +36.6	66.1	3 28.6 +37.4	66.2	3 28.6 +37.4	66.2	3 28.6 +37.4	66.2	21								
22	1 10.0 +31.8	65.1	1 35.2 +32.7	65.1	2 00.5 +33.4	65.2	2 25.6 +34.3	65.2	2 50.8 +35.0	65.2	3 15.9 +35.8	65.3	3 41.0 +36.5	65.3	4 06.0 +37.3	65.4	4 06.0 +37.3	65.4	4 06.0 +37.3	65.4	22								
23	1 41.8 +31.9	64.3	2 07.9 +32.6	64.3	2 33.9 +33.4	64.3	2 59.9 +34.2	64.4	3 25.8 +35.0	64.4	3 51.7 +35.7	64.5	4 17.5 +36.5	64.5	4 43.3 +37.2	64.6	4 43.3 +37.2	64.6	4 43.3 +37.2	64.6	23								
24	2 13.7 +31.8	63.4	2 40.5 +32.6	63.5	3 07.3 +33.4	63.5	3 34.1 +34.1	63.5	4 00.8 +34.9	63.6	4 27.4 +35.7	63.7	4 54.0 +36.4	63.7	5 20.5 +37.2	63.8	5 20.5 +37.2	63.8	5 20.5 +37.2	63.8	24								
25	2 45.5 +31.8	62.6	3 13.1 +32.6	62.6	3 40.7 +33.3	62.7	4 08.2 +34.1	62.7	4 35.7 +34.8	62.8	5 03.1 +35.6	62.9	5 30.4 +36.4	63.0	5 57.7 +37.1	63.0	5 57.7 +37.1	63.0	5 57.7 +37.1	63.0	25								
26	3 17.3 +31.7	61.7	3 45.7 +32.5	61.8	4 14.0 +33.3	61.8	4 42.3 +34.1	61.9	5 10.5 +34.8	62.0	5 38.7 +35.5	62.1	6 06.8 +36.3	62.2	6 34.8 +37.0	62.2	6 34.8 +37.0	62.2	6 34.8 +37.0	62.2	26								
27	3 49.0 +31.7	60.9	4 18.2 +32.4	60.9	4 47.3 +33.2	61.0	5 16.4 +33.9	61.1	5 45.3 +34.8	61.2	6 14.2 +35.5	61.2	6 43.1 +36.2	61.3	7 11.8 +36.9	61.5	7 11.8 +36.9	61.5	7 11.8 +36.9	61.5	27								
28	4 20.7 +31.6	60.0	4 50.6 +32.4	60.1	5 20.5 +33.2	60.2	5 50.3 +33.9	60.2	6 20.1 +34.6	60.3	6 49.7 +35.4	60.4	7 19.3 +36.1	60.5	7 48.7 +36.9	60.7	7 48.7 +36.9	60.7	7 48.7 +36.9	60.7	28								
29	4 52.3 +31.6	59.2	5 23.0 +32.3	59.2	5 53.7 +33.0	59.3	6 24.2 +33.9	59.4	6 54.7 +34.6	59.5	7 25.1 +35.3	59.6	7 55.4 +36.0	59.7	8 25.6 +36.7	59.9	8 25.6 +36.7	59.9	8 25.6 +36.7	59.9	29								
30	5 23.9 +31.4	58.3	5 55.3 +32.3	58.4	6 26.7 +33.0	58.5	6 58.1 +33.7	58.6	7 29.3 +34.5	58.7	8 00.4 +35.2	58.8	8 31.4 +36.0	58.9	9 02.3 +36.7	59.1	9 02.3 +36.7	59.1	9 02.3 +36.7	59.1	30								
31	5 55.3 +31.4	57.5	6 27.6 +32.1	57.5	6 59.7 +32.9	57.6	7 31.8 +33.6	57.8	8 03.8 +34.3	57.9	8 35.6 +35.1	58.1	9 07.4 +35.8	58.1	9 39.0 +36.5	58.3	9 39.0 +36.5	58.3	9 39.0 +36.5	58.3	31								
32	6 26.7 +31.4	56.6	6 59.7 +32.1	56.7	7 32.6 +32.8	56.8	8 05.4 +33.6	56.9	8 38.1 +34.3	57.0	9 10.7 +35.0	57.2	9 43.2 +35.7	57.3	10 15.5 +36.5	57.5	10 15.5 +36.5	57.5	10 15.5 +36.5	57.5	32								
33	6 58.1 +31.2	55.7	7 31.8 +32.0	55.8	8 05.4 +32.7	56.0	8 39.0 +33.4	56.1	9 12.4 +34.2	56.2	9 45.7 +34.9	56.3	10 18.9 +35.6	56.5	10 52.0 +36.3	56.6	10 52.0 +36.3	56.6	10 52.0 +36.3	56.6	33								
34	7 29.3 +31.1	54.9	8 03.8 +31.8	55.0	9 10.7 +32.5	54.5	9 45.7 +33.2	54.4	10 20.6 +33.9	54.5	10 55.3 +34.7	54.7	11 30.0 +35.3	54.9	12 04.4 +36.0	55.0	12 04.4 +36.0	55.											

79°, 281° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	9 30.7 +30.3	95.6	9 24.8 +31.3	95.7	9 18.7 +32.2	95.9	9 12.5 +33.0	96.0	9 06.1 +33.9	96.2	8 59.5 +34.8	96.4	8 52.8 +35.6	96.5	8 45.9 +36.5	96.7	0	o	o	o	o	o	o	o	
1	10 01.0 +30.3	94.7	9 56.1 +31.1	94.9	9 50.9 +32.0	95.0	9 45.5 +33.0	95.2	9 40.0 +33.8	95.4	9 34.3 +34.7	95.5	9 28.4 +35.6	95.7	9 22.4 +36.4	95.9	1	o	o	o	o	o	o	o	
2	10 31.3 +30.0	93.8	10 27.2 +31.0	94.0	10 22.9 +31.9	94.2	10 18.5 +32.8	94.3	10 13.8 +33.7	94.5	10 09.0 +34.5	94.7	10 04.0 +35.4	94.9	9 58.8 +36.2	95.1	2	o	o	o	o	o	o	o	
3	11 01.3 +29.9	92.9	10 58.2 +30.8	93.1	10 54.8 +31.8	93.3	10 51.3 +32.6	93.5	10 47.5 +33.5	93.7	10 43.5 +34.4	93.9	10 39.4 +35.3	94.1	10 35.0 +36.2	94.3	3	o	o	o	o	o	o	o	
4	11 31.2 +29.8	92.0	11 29.0 +30.7	92.2	11 26.6 +31.5	92.4	11 23.9 +32.5	92.6	11 21.0 +33.4	92.8	11 17.9 +34.3	93.0	11 14.7 +35.1	93.2	11 11.2 +36.0	93.4	4	o	o	o	o	o	o	o	
5	12 01.0 +29.6	91.1	11 59.7 +30.5	91.4	11 58.1 +31.5	91.6	11 56.4 +32.3	91.8	11 54.4 +33.3	92.0	11 52.2 +34.1	92.2	11 49.8 +35.0	92.4	11 47.2 +35.8	92.6	5	o	o	o	o	o	o	o	
6	12 30.6 +29.4	90.3	12 30.2 +30.3	90.5	12 29.6 +31.2	90.7	12 28.7 +32.2	90.9	12 27.7 +33.0	91.1	12 26.3 +34.0	91.4	12 24.8 +34.8	91.6	12 23.0 +35.7	91.8	6	o	o	o	o	o	o	o	
7	13 00.0 +29.2	89.4	13 00.5 +30.2	89.6	13 00.8 +31.1	89.8	13 00.9 +32.0	90.1	13 00.7 +32.9	90.3	13 00.3 +33.8	90.5	12 59.6 +34.7	90.7	12 58.7 +35.6	91.0	7	o	o	o	o	o	o	o	
8	13 29.2 +29.1	88.5	13 30.7 +30.0	88.7	13 31.9 +30.9	88.9	13 32.9 +31.8	89.2	13 33.6 +32.8	89.4	13 34.1 +33.6	89.7	13 34.3 +34.5	89.9	13 34.3 +35.4	90.2	8	o	o	o	o	o	o	o	
9	13 58.3 +28.4	87.6	14 00.7 +29.7	87.8	14 02.8 +30.7	88.1	14 04.7 +31.7	88.3	14 06.4 +32.5	88.6	14 07.7 +33.5	88.8	14 08.8 +34.4	89.1	14 09.7 +35.2	89.3	9	o	o	o	o	o	o	o	
10	14 27.1 +28.6	86.7	14 30.4 +29.6	86.9	14 33.5 +30.5	87.2	14 36.4 +31.4	87.4	14 38.9 +32.4	87.7	14 41.2 +33.2	88.0	14 43.2 +34.1	88.2	14 44.9 +35.0	88.5	10	o	o	o	o	o	o	o	
11	14 55.7 +28.4	85.8	15 00.0 +29.4	86.0	15 04.0 +30.3	86.3	15 07.8 +31.2	86.6	15 11.3 +32.1	86.8	15 14.4 +33.1	87.1	15 17.3 +34.0	87.4	15 19.9 +34.9	87.6	11	o	o	o	o	o	o	o	
12	15 24.1 +28.2	84.8	15 29.4 +29.1	85.1	15 34.3 +30.1	85.4	15 39.0 +31.0	85.7	15 43.4 +31.9	85.9	15 47.5 +32.8	86.2	15 51.3 +33.7	86.5	15 54.8 +34.6	86.8	12	o	o	o	o	o	o	o	
13	15 52.3 +28.0	83.9	15 58.5 +28.9	84.2	16 04.4 +29.9	84.5	16 10.0 +30.8	84.8	16 15.3 +31.8	85.1	16 20.3 +32.7	85.4	16 25.0 +33.6	85.7	16 29.4 +34.5	85.9	13	o	o	o	o	o	o	o	
14	16 20.3 +27.7	83.0	16 27.4 +28.7	83.3	16 34.3 +29.6	83.6	16 40.8 +30.6	83.9	16 47.1 +31.4	84.2	16 53.0 +32.4	84.5	16 58.6 +33.3	84.8	17 03.9 +34.2	85.1	14	o	o	o	o	o	o	o	
15	16 48.0 +27.4	82.1	16 56.1 +28.4	82.4	17 03.9 +29.4	82.7	17 11.4 +30.3	83.0	17 18.5 +31.3	83.3	17 25.4 +32.2	83.6	17 31.9 +33.1	83.9	17 38.1 +34.0	84.2	15	o	o	o	o	o	o	o	
16	17 15.4 +27.2	81.1	17 24.5 +28.2	81.5	17 33.3 +29.1	81.8	17 41.7 +30.1	82.1	17 49.8 +31.0	82.4	17 57.6 +31.9	82.7	18 05.0 +32.9	83.0	18 12.1 +33.8	83.4	16	o	o	o	o	o	o	o	
17	17 42.6 +27.0	80.2	17 52.7 +27.9	80.5	18 02.4 +28.8	80.8	18 11.8 +29.8	81.2	18 20.8 +30.8	81.5	18 29.5 +31.7	81.8	18 37.9 +32.6	82.2	18 45.9 +33.5	82.5	17	o	o	o	o	o	o	o	
18	18 09.6 +26.6	79.3	18 20.6 +26.7	79.6	18 31.2 +26.8	79.9	18 41.6 +29.5	80.3	18 51.6 +30.4	80.6	19 01.2 +31.4	80.9	19 10.5 +32.3	81.3	19 19.4 +33.3	81.6	18	o	o	o	o	o	o	o	
19	18 36.2 +26.4	78.3	18 48.2 +27.4	78.7	18 59.8 +28.4	79.0	19 11.1 +29.3	79.3	19 22.0 +30.3	79.7	19 32.6 +31.2	80.0	19 42.8 +32.1	80.4	19 52.7 +33.0	80.7	19	o	o	o	o	o	o	o	
20	19 02.6 +26.1	77.4	19 15.6 +27.0	77.7	19 28.2 +28.0	78.1	19 40.4 +29.0	78.4	19 52.3 +29.9	78.8	20 03.8 +30.8	79.1	20 14.9 +31.8	79.5	20 25.7 +32.7	79.8	20	o	o	o	o	o	o	o	
21	19 28.7 +25.8	76.4	19 42.6 +26.8	76.8	19 56.2 +27.7	77.1	20 09.4 +28.6	77.5	20 22.2 +29.6	77.8	20 34.6 +30.6	78.2	20 46.7 +31.5	78.6	20 58.4 +32.5	78.9	21	o	o	o	o	o	o	o	
22	19 54.5 +25.5	75.5	20 09.4 +26.4	75.8	20 23.9 +27.4	76.2	20 38.0 +28.4	76.5	20 51.8 +29.4	76.9	21 05.2 +30.3	77.3	21 18.2 +31.3	77.7	21 30.9 +32.1	78.0	22	o	o	o	o	o	o	o	
23	20 20.0 +25.1	74.5	20 35.8 +26.2	74.9	20 51.3 +27.1	75.2	21 06.4 +28.1	75.6	21 21.2 +29.0	76.0	21 35.5 +30.0	76.4	21 49.5 +30.9	76.7	22 03.0 +31.9	77.1	23	o	o	o	o	o	o	o	
24	20 45.1 +24.9	73.5	21 02.0 +25.8	73.9	21 18.4 +26.8	74.3	21 34.5 +27.7	74.6	21 50.2 +28.7	75.0	22 05.5 +29.6	75.4	22 20.4 +30.6	75.8	22 34.9 +31.5	76.2	24	o	o	o	o	o	o	o	
25	21 10.0 +24.5	72.6	21 27.8 +25.4	72.9	21 45.2 +26.4	73.3	22 02.2 +27.4	73.7	22 18.9 +28.3	74.1	22 35.1 +29.3	74.5	22 51.0 +30.2	74.9	23 06.4 +31.2	75.3	25	o	o	o	o	o	o	o	
26	21 34.5 +24.1	71.6	21 53.2 +25.2	72.0	22 11.6 +26.1	72.3	22 29.6 +27.1	72.7	22 47.2 +28.1	73.1	23 04.4 +29.0	73.5	23 21.2 +30.0	73.9	23 37.6 +30.9	74.4	26	o	o	o	o	o	o	o	
27	21 58.6 +23.8	70.6	22 18.4 +24.7	71.0	22 37.7 +25.8	71.4	22 56.7 +26.7	71.8	23 15.3 +27.6	72.2	23 33.4 +28.7	72.6	23 51.2 +29.6	73.0	24 08.5 +30.5	73.4	27	o	o	o	o	o	o	o	
28	22 22.4 +23.4	69.6	22 43.1 +24.4	70.0	23 03.5 +25.3	70.4	23 24.3 +26.3	70.8	23 42.9 +27.3	71.2	24 02.1 +28.2	71.6	24 20.8 +29.2	72.0	24 39.0 +30.2	72.5	28	o	o	o	o	o	o	o	
29	22 45.8 +23.1	68.6	23 07.5 +24.0	69.0	23 28.8 +25.0	69.4	23 49.7 +26.0	69.8	24 10.2 +27.0	70.2	24 30.3 +27.9	70.7	24 50.0 +28.8	71.1	25 09.2 +29.8	71.5	29	o	o	o	o	o	o	o	
30	23 08.9 +22.6	67.6	23 31.5 +23.7	68.0	23 53.8 +24.6	68.4	24 15.7 +25.6	68.8	24 37.2 +26.5	69.2	24 58.2 +27.5	69.7	25 18.8 +28.5	70.1	25 39.0 +29.4	70.6	30	o	o	o	o	o	o	o	
31	23 31.5 +22.3	66.6	23 55.2 +23.2	67.0	24 18.4 +24.3	67.4	24 41.3 +25.2	67.8	25 03.7 +26.2	68.3	25 25.7 +27.1	68.7	25 47.3 +28.1	69.1	26 08.4 +29.1	69.6	31	o	o	o	o	o	o	o	
32	23 53.8 +21.9	65.6	24 18.4 +22.9	66.0	24 42.7 +23.8	66.4	25 06.5 +24.8	66.8	25 29.9 +25.7	67.3	25 52.8 +26.7	68.2	26 15.4 +27.7	68.8	26 37.5 +28.6	68.6	32	o	o	o	o	o	o	o	
33	24 15.7 +21.5	64.6	24 41.3 +22.4	65.0	25 06.5 +23.4	65.4	25 31.3 +24.3	65.8	25 55.6 +25.3	66.3	26 19.6 +26.3	66.7	26 43.1 +27.2	67.2	27 06.1 +28.2	67.6	33	o	o	o	o	o	o	o	
34	24 37.2 +21.0	63.5	25 03.7 +22.0	63.9	25 29.9 +22.9	64.4	25 55.6 +24.0	64.8	26 20.9 +25.0	65.3	26 45.9 +25.8	65.7	27 10.3 +26.8	66.2	27 34.3 +27.8	66.6	34	o	o	o	o	o	o	o	
35	24 58.2 +20.6	62.5	25 25.7 +21.6	62.9	25 52.8 +22.6	63.3	26 19.6 +23.5	63.8	26 45.9 +24.4	64.2	27 11.7 +25.4	64.7	27 37.1 +26.4	65.2	28 02.1 +27.4	65.6	35	o	o	o	o	o	o	o	
36	25 18.8 +20.2	61.5	25 47.3 +21.1	61.9	26 15.4 +22.1	62.3	26 43.1 +23.0</td																		

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 79°, 281°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	9 30.7 -30.5	95.6	9 24.8 -31.4	95.7	9 18.7 -32.2	95.9	9 12.5 -33.2	96.0	9 06.1 -34.0	96.2	8 59.5 -34.9	96.4	8 52.8 -35.7	96.5	8 45.9 -36.6	96.7	8 49.5 -36.6	96.7	8 09.3 -36.6	97.5	1	0			
1	9 00.2 -30.6	96.4	8 53.4 -31.5	96.6	8 46.5 -32.4	96.7	8 39.3 -33.2	96.9	8 32.1 -34.2	97.0	8 24.6 -35.0	97.2	8 17.1 -35.9	97.3	8 32.7 -36.8	98.3	7 32.7 -36.8	98.3	7 32.7 -36.8	98.3	2	1			
2	8 29.6 -30.7	97.3	8 21.9 -31.6	97.4	8 14.1 -32.5	97.6	8 06.1 -33.4	97.7	7 57.9 -34.2	97.9	7 49.6 -35.1	98.0	7 41.2 -35.9	98.1	7 32.7 -36.8	98.3	7 32.7 -36.8	98.3	3	2					
3	7 58.9 -30.8	98.2	7 50.3 -31.7	98.3	7 41.6 -32.6	98.4	7 32.7 -33.5	98.6	7 23.7 -34.3	98.7	7 14.5 -35.1	98.8	7 05.3 -36.0	98.9	6 55.9 -36.9	99.1	6 19.0 -36.9	99.9	4	3					
4	7 28.1 -31.0	99.0	7 18.6 -31.8	99.2	7 09.0 -32.7	99.3	6 59.2 -33.5	99.4	6 49.4 -34.5	99.5	6 39.4 -35.3	99.6	6 29.3 -36.1	99.8	6 19.0 -36.9	99.9	6 19.0 -36.9	99.9	4	4					
5	6 57.1 -31.0	99.9	6 46.8 -32.0	100.0	6 36.3 -32.8	100.1	6 25.7 -33.7	100.2	6 14.9 -34.5	100.3	6 04.1 -35.3	100.5	5 53.2 -36.2	100.6	5 42.1 -37.0	100.7	5 42.1 -37.0	100.7	5	5					
6	6 26.1 -31.1	100.8	6 14.8 -31.9	100.9	6 03.5 -32.9	101.0	5 52.0 -33.7	101.1	5 40.4 -34.5	101.2	5 28.8 -35.4	101.3	5 17.0 -36.2	101.4	5 05.1 -37.0	101.4	5 05.1 -37.0	101.4	6	6					
7	5 55.0 -31.2	101.6	5 42.9 -32.1	101.7	5 30.6 -32.9	101.8	5 18.3 -33.8	101.9	5 05.9 -34.6	102.0	4 53.4 -35.5	102.1	4 40.8 -36.3	102.2	4 28.1 -37.1	102.2	4 28.1 -37.1	102.2	7	7					
8	5 23.8 -31.3	102.5	5 10.8 -32.1	102.6	4 57.7 -33.0	102.6	4 44.5 -33.8	102.7	4 31.3 -34.7	102.8	4 17.9 -35.5	102.9	4 04.5 -36.3	103.0	3 51.0 -37.1	103.0	3 51.0 -37.1	103.0	8	8					
9	4 52.5 -31.3	103.3	4 38.7 -32.2	103.4	4 24.7 -33.0	103.5	4 10.7 -33.9	103.6	3 56.6 -34.8	103.6	3 42.4 -35.5	103.7	3 28.2 -36.4	103.8	3 13.9 -37.2	103.8	3 13.9 -37.2	103.8	9	9					
10	4 21.2 -31.4	104.2	4 06.5 -32.3	104.3	3 51.7 -33.1	104.3	3 36.8 -34.0	104.4	3 21.8 -34.7	104.4	3 06.9 -35.6	104.5	2 51.8 -36.4	104.6	2 36.7 -37.2	104.6	2 36.7 -37.2	104.6	10	10					
11	3 49.8 -31.4	105.0	3 34.2 -32.3	105.1	3 18.6 -33.2	105.2	3 02.8 -33.9	105.2	2 47.1 -34.8	105.3	2 31.3 -35.7	105.3	2 15.4 -36.4	105.3	1 59.5 -37.2	105.4	1 59.5 -37.2	105.4	11	11					
12	3 18.4 -31.5	105.9	3 01.9 -32.3	105.9	2 45.4 -33.1	106.0	2 28.9 -34.0	106.0	2 12.3 -34.9	106.1	1 55.6 -35.6	106.1	1 39.0 -36.5	106.1	1 22.3 -37.3	106.2	1 22.3 -37.3	106.2	12	12					
13	2 46.9 -31.5	106.7	2 29.6 -32.4	106.8	2 12.3 -33.2	106.8	1 54.9 -34.1	106.9	1 37.4 -34.8	106.9	1 20.0 -35.7	106.9	1 02.5 -36.4	106.9	0 45.0 -37.2	107.0	0 45.0 -37.2	107.0	13	13					
14	2 15.4 -31.5	107.6	1 57.2 -32.3	107.6	1 39.1 -33.3	107.7	1 20.8 -34.0	107.7	1 02.6 -34.9	107.7	0 44.3 -35.6	107.7	0 26.1 -36.5	107.7	0 07.8 -37.3	107.7	0 07.8 -37.3	107.7	14	14					
15	1 43.9 -31.6	108.4	1 24.9 -32.5	108.5	1 05.8 -33.2	108.5	0 46.8 -34.1	108.5	0 27.7 -34.8	108.5	0 08.7 -35.7	108.5	0 10.4 +36.5	71.5	0 29.5 +37.2	71.5	0 29.5 +37.2	71.5	15	15					
16	1 12.3 -31.6	109.3	0 52.4 -32.4	109.3	0 32.6 -33.2	109.3	0 12.7 -34.0	109.3	0 07.1 +34.9	70.7	0 27.0 +35.7	70.7	0 46.9 +36.4	70.7	1 06.7 +37.2	70.7	1 06.7 +37.2	70.7	16	16					
17	0 40.7 -31.6	110.1	0 20.0 -32.4	110.2	0 12.4 +32.4	69.0	0 33.9 +33.2	69.0	0 55.4 +34.0	69.0	1 16.9 +34.8	69.0	1 38.3 +35.6	69.1	1 59.7 +36.5	69.1	2 21.1 +37.2	69.1	2 21.1 +37.2	69.1	18	18			
18	0 09.1 -31.6	111.0	0 12.4 +32.4	69.0	0 00.6 +33.3	69.8	0 21.3 +34.1	69.8	0 42.0 +34.9	69.9	1 02.7 +35.6	69.9	1 23.3 +36.4	69.9	1 43.9 +37.2	69.9	1 43.9 +37.2	69.9	17	17					
19	0 22.5 +31.6	68.2	0 44.8 +32.4	68.2	1 07.1 +33.3	68.2	1 29.4 +34.0	68.2	1 51.7 +34.8	68.2	2 13.9 +35.6	68.3	2 36.2 +36.3	68.3	2 58.3 +37.2	68.3	2 58.3 +37.2	68.3	19	19					
20	0 54.1 +31.6	67.3	1 17.2 +32.4	67.3	1 40.4 +33.2	67.3	2 03.4 +34.0	67.4	2 26.5 +34.8	67.4	2 49.5 +35.6	67.5	3 12.5 +36.4	67.5	3 35.5 +37.1	67.6	3 35.5 +37.1	67.6	20	20					
21	1 25.7 +31.5	66.5	1 49.6 +32.4	66.5	2 13.6 +33.1	66.5	2 37.4 +34.0	66.5	3 01.3 +34.8	66.6	3 25.1 +35.6	66.6	3 48.9 +36.3	66.7	4 12.6 +37.0	66.8	4 12.6 +37.0	66.8	21	21					
22	1 57.2 +31.6	65.6	2 22.0 +32.3	65.6	2 46.7 +33.2	65.7	3 11.4 +33.9	65.7	3 36.1 +34.7	65.8	4 00.7 +35.4	65.8	4 25.2 +36.2	65.9	4 49.6 +37.0	66.0	4 49.6 +37.0	66.0	22	22					
23	2 28.8 +31.5	64.7	2 54.3 +32.3	64.8	3 19.9 +33.1	64.8	3 45.3 +33.9	64.9	4 10.8 +34.6	65.0	4 36.1 +35.5	65.0	5 01.4 +36.2	65.1	5 26.6 +37.0	65.2	5 26.6 +37.0	65.2	23	23					
24	3 00.3 +31.4	63.9	3 26.6 +32.3	63.9	3 53.0 +33.0	64.0	4 19.2 +33.9	64.1	4 45.4 +34.6	64.1	5 11.6 +35.3	64.2	5 37.6 +36.1	64.3	6 03.6 +36.9	64.4	6 03.6 +36.9	64.4	24	24					
25	3 31.7 +31.4	63.0	3 58.9 +32.2	63.1	4 26.0 +33.0	63.2	4 53.1 +33.7	63.2	5 20.0 +34.6	63.3	5 46.9 +35.3	63.4	6 13.7 +36.1	63.5	6 40.5 +36.8	63.6	6 40.5 +36.8	63.6	25	25					
26	4 03.1 +31.4	62.2	4 31.1 +32.1	62.3	4 59.0 +32.9	62.3	5 26.8 +33.7	62.4	5 54.6 +34.4	62.5	6 22.2 +35.2	62.6	6 49.8 +36.0	62.7	7 17.3 +36.7	62.8	7 17.3 +36.7	62.8	26	26					
27	4 34.5 +31.3	61.3	5 03.2 +32.1	61.4	5 31.9 +32.9	61.5	6 00.5 +33.6	61.6	6 29.0 +34.4	61.7	6 57.4 +35.2	61.8	7 25.8 +35.9	61.9	7 54.0 +36.6	62.0	7 54.0 +36.6	62.0	27	27					
28	5 05.8 +31.2	60.5	5 35.3 +32.0	60.6	6 04.8 +32.7	60.6	6 34.1 +33.6	60.7	7 03.4 +34.3	60.8	7 32.6 +35.0	61.0	8 01.7 +35.7	61.1	8 30.6 +36.5	61.2	8 30.6 +36.5	61.2	28	28					
29	5 37.0 +31.2	59.6	6 07.3 +31.9	59.7	7 07.7 +33.4	59.9	7 37.7 +34.2	60.0	8 07.6 +35.0	60.1	8 37.4 +35.7	60.3	9 07.1 +36.5	60.4	9 43.6 +36.3	60.6	9 43.6 +36.3	60.6	29	29					
30	6 08.2 +31.0	58.8	6 39.2 +31.9	58.9	7 10.2 +32.6	59.0	7 41.1 +33.4	59.1	8 11.9 +34.1	59.2	8 42.6 +34.8	59.3	9 13.1 +35.6	59.5	9 43.6 +36.3	59.6	9 43.6 +36.3	59.6	30	30					
31	6 39.2 +31.0	57.9	7 11.1 +31.7	58.0	7 42.8 +32.5	58.1	8 14.5 +33.2	58.2	8 46.0 +34.0	58.4	9 17.4 +34.7	58.5	9 48.7 +35.5	58.6	10 19.9 +36.2	58.8	10 19.9 +36.2	58.8	31	31					
32	7 10.2 +30.9	57.0	7 42.8 +31.7	57.1	8 15.3 +32.4	57.3	8 47.7 +33.2	57.4	9 20.0 +33.9	57.5	9 52.1 +34.7	57.7	10 24.2 +35.3	57.8	10 56.1 +36.0	58.0	10 56.1 +36.0	58.0	32	32					
33	7 41.1 +30.8	56.2	8 14.5 +31.5	56.3	8 47.7 +32.3	56.4	9 20.9 +33.0	56.5	9 53.9 +33.7	56.7	10 26.8 +34.4	56.8	10 59.5 +35.2	57.0	11 32.1 +35.9	57.2	11 32.1 +35.9	57.2	33	33					
34	8 11.9 +30.7	55.3	8 46.0 +31.4	55.4	9 20.0 +32.1	55.4	9 52.1 +32.1	55.4	10 09.2 +33.5	55.5	11 35.6 +34.2	55.5	12 09.8 +34.9	55.3	12 43.8 +35.6	55.5	12 43.8 +35.6	55.5	34	34					
35	8 42.6 +30.5	54.4	9 17.4 +31.3	54.6	10 24.2 +31.9	54.7	11 34.7 +33.3	54.0	11 34.7 +33.3	54.2	12 09.8 +34.0	54.3	12 44.7 +34.7	54.5	13 19.4 +35.5	54.7	13 19.4 +35.5	54.7	35	35					
36	9 13.1 +30.5	53.6	9 48.7 +31.2	53.7	10 24.2 +31.9	53.8	10 59.5 +32.6	54.0	11 34.7 +33.3	54.2	12 43.8 +33.9	53.5	13 19.4 +34.6	53.7	13 54.9 +35.3	53.9	13 54.9 +35.3	53.9	36	36					
37	9 43.6 +30.3	52.7	10 19.9 +31.0	52.8	10 56.1 +31.7	53.0	11 32.1 +33.5	53.1	12 08.0 +33.2	53.3	12 43.8 +33.9	53.5	13 19.4 +34.6	53.7	13 54.9 +35.3	53.9	13 54.9 +35.3	53.9	37	37					
38	10 13.9 +30.1	51.8	10 50.9 +30.9	52.0	11 27.8 +31.6	52																			

80°, 280° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	8 39.0 +30.2	95.0	8 33.6 +31.2	95.2	8 28.1 +32.1	95.3	8 22.4 +33.0	95.5	8 16.6 +33.9	95.6	8 10.7 +34.7	95.8	8 04.6 +35.5	95.9	7 58.3 +36.4	96.1	0	0	,	,	,	0	0	0	0
1	9 09.2 +30.2	94.2	9 04.8 +31.1	94.3	9 00.2 +32.0	94.5	8 55.4 +32.9	94.6	8 50.5 +33.7	94.8	8 45.4 +34.6	95.0	8 40.1 +35.5	95.1	8 34.7 +36.3	95.3	1	0	,	,	,	0	0	0	0
2	9 39.4 +30.0	93.3	9 35.9 +30.9	93.5	9 32.2 +31.8	93.6	9 28.3 +32.7	93.8	9 24.2 +33.6	94.0	9 20.0 +34.5	94.1	9 15.6 +35.3	94.3	9 11.0 +36.2	94.4	2	0	,	,	,	0	0	0	0
3	10 09.4 +29.9	92.4	10 06.8 +30.8	92.6	10 04.0 +31.7	92.8	10 01.0 +32.6	92.9	9 57.8 +33.5	93.1	9 54.5 +34.4	93.3	9 50.9 +35.3	93.5	9 47.2 +36.1	93.6	3	0	,	,	,	0	0	0	0
4	10 39.3 +29.7	91.5	10 37.6 +30.7	91.7	10 35.7 +31.6	91.9	10 33.6 +32.5	92.1	10 31.3 +33.4	92.3	10 28.9 +34.2	92.5	10 26.2 +35.1	92.6	10 23.3 +36.0	92.8	4	0	,	,	,	0	0	0	0
5	11 09.0 +29.6	90.6	11 08.3 +30.5	90.8	11 07.3 +31.4	91.0	11 06.1 +32.3	91.2	11 04.7 +33.2	91.4	11 03.1 +34.1	91.6	11 01.3 +35.0	91.8	10 59.3 +35.8	92.0	5	0	,	,	,	0	0	0	0
6	11 38.6 +29.4	89.8	11 38.8 +30.3	90.0	11 38.7 +31.3	90.2	11 38.4 +32.2	90.4	11 37.9 +33.1	90.6	11 37.2 +34.0	90.8	11 36.3 +34.8	91.0	11 35.1 +35.7	91.2	6	0	,	,	,	0	0	0	0
7	12 08.0 +29.3	88.9	12 09.1 +30.2	89.1	12 10.0 +31.1	89.3	12 10.6 +32.0	89.5	12 11.0 +32.9	89.7	12 11.2 +33.8	89.9	12 11.1 +34.7	90.2	12 10.8 +35.6	90.4	7	0	,	,	,	0	0	0	0
8	12 37.3 +29.0	88.0	12 39.3 +30.9	88.2	12 41.1 +30.9	88.4	12 42.6 +31.8	88.6	12 43.9 +32.7	88.9	12 45.0 +33.6	89.1	12 45.8 +34.5	89.3	12 46.4 +35.4	89.5	8	0	,	,	,	0	0	0	0
9	13 06.3 +28.8	87.1	13 09.3 +29.8	87.3	13 12.0 +30.7	87.5	13 14.4 +31.7	87.8	13 16.6 +32.6	88.0	13 18.6 +33.5	88.2	13 20.3 +34.4	88.5	13 21.8 +35.2	88.7	9	0	,	,	,	0	0	0	0
10	13 35.2 +28.7	86.2	13 39.1 +29.6	86.4	13 42.7 +30.6	86.7	13 46.1 +31.5	86.9	13 49.2 +32.4	87.1	13 52.1 +33.3	87.4	13 54.7 +34.2	87.6	13 57.0 +35.1	87.9	10	0	,	,	,	0	0	0	0
11	14 03.9 +28.5	85.3	14 08.7 +29.5	85.5	14 13.3 +30.3	85.8	14 17.6 +31.3	86.0	14 21.6 +32.2	86.3	14 25.4 +33.1	86.5	14 28.9 +34.0	86.8	14 32.1 +34.9	87.1	11	0	,	,	,	0	0	0	0
12	14 32.4 +28.3	84.4	14 38.2 +29.2	84.6	14 43.6 +30.2	84.9	14 48.9 +31.0	85.1	14 53.8 +32.0	85.4	14 58.5 +32.9	85.7	15 02.9 +33.8	85.9	15 07.0 +34.7	86.2	12	0	,	,	,	0	0	0	0
13	15 00.7 +28.0	83.4	15 07.4 +29.0	83.7	15 13.8 +29.9	84.0	15 19.9 +30.9	84.3	15 25.8 +31.8	84.5	15 31.4 +32.7	84.8	15 36.7 +33.6	85.1	15 41.7 +34.5	85.4	13	0	,	,	,	0	0	0	0
14	15 28.7 +28.8	82.5	15 36.4 +28.7	82.8	15 43.7 +29.8	83.1	15 50.8 +30.7	83.4	15 57.6 +31.6	83.6	16 04.1 +32.5	83.9	16 10.3 +33.4	84.2	16 16.2 +34.3	84.5	14	0	,	,	,	0	0	0	0
15	15 56.5 +27.6	81.6	16 05.1 +28.6	81.9	16 13.5 +29.4	82.2	16 21.5 +30.4	82.5	16 29.2 +31.3	82.8	16 36.6 +32.3	83.1	16 43.7 +33.2	83.4	16 50.5 +34.0	83.7	15	0	,	,	,	0	0	0	0
16	16 24.1 +27.4	80.7	16 33.7 +28.3	81.0	16 42.9 +29.3	81.3	16 51.9 +30.2	81.6	17 00.5 +31.1	81.9	17 08.9 +32.0	82.2	17 16.9 +32.9	82.5	17 24.5 +33.9	82.8	16	0	,	,	,	0	0	0	0
17	16 51.5 +27.1	79.8	17 02.0 +28.0	80.1	17 12.2 +29.0	80.4	17 22.1 +29.9	80.7	17 31.6 +30.9	81.0	17 40.9 +31.8	81.3	17 49.8 +32.7	81.6	17 58.4 +33.6	81.9	17	0	,	,	,	0	0	0	0
18	17 18.6 +26.8	78.8	17 30.0 +27.8	79.1	17 41.2 +28.7	79.4	17 52.0 +29.7	79.8	18 02.5 +30.6	80.1	18 12.7 +31.5	80.4	18 22.5 +32.5	80.7	18 32.0 +33.4	81.1	18	0	,	,	,	0	0	0	0
19	17 45.4 +26.6	77.9	17 57.8 +27.6	78.2	18 09.9 +28.5	78.5	18 21.7 +29.4	78.8	18 33.1 +30.4	79.2	18 44.2 +31.3	79.5	18 55.0 +32.2	79.8	19 05.4 +33.2	80.2	19	0	,	,	,	0	0	0	0
20	18 12.0 +26.2	76.9	18 25.4 +27.2	77.3	18 38.4 +28.2	77.6	18 51.1 +29.2	77.9	19 03.5 +30.1	78.3	19 15.5 +31.1	78.6	19 27.2 +32.0	78.9	19 38.6 +32.8	79.3	20	0	,	,	,	0	0	0	0
21	18 38.2 +26.0	76.0	18 52.6 +27.0	76.3	19 06.6 +27.9	76.7	19 20.3 +28.9	77.0	19 33.6 +29.8	77.3	19 46.6 +30.7	77.7	19 59.2 +31.7	78.0	20 11.4 +32.6	78.4	21	0	,	,	,	0	0	0	0
22	19 04.2 +25.8	75.0	19 19.6 +26.6	75.4	19 34.5 +27.7	75.7	19 49.2 +28.5	76.1	20 03.4 +29.5	76.4	20 17.3 +30.5	76.8	20 30.9 +31.4	77.1	20 44.0 +32.4	77.5	22	0	,	,	,	0	0	0	0
23	19 30.0 +25.4	74.1	19 46.2 +26.4	74.4	20 02.2 +27.3	74.8	20 17.7 +28.3	75.1	20 32.9 +29.3	75.5	20 47.8 +30.2	75.9	21 02.3 +31.1	76.2	21 16.4 +32.0	76.6	23	0	,	,	,	0	0	0	0
24	19 55.4 +25.0	73.1	20 12.6 +26.1	73.5	20 29.5 +27.0	73.8	20 46.0 +28.0	74.2	21 02.2 +28.9	74.6	21 18.0 +29.8	74.9	21 33.4 +30.8	75.3	21 48.4 +31.7	75.7	24	0	,	,	,	0	0	0	0
25	20 20.4 +24.8	72.2	20 38.7 +25.7	72.5	20 56.5 +26.7	72.9	21 14.0 +27.6	73.2	21 31.1 +28.6	73.6	21 47.8 +29.6	74.0	22 04.2 +30.5	74.4	22 20.1 +31.4	74.8	25	0	,	,	,	0	0	0	0
26	20 45.2 +24.5	71.2	21 04.4 +25.4	71.5	21 23.2 +26.4	71.9	21 41.6 +27.4	72.3	21 59.7 +28.3	72.7	22 17.4 +29.2	73.1	22 34.7 +30.1	73.5	22 51.5 +31.1	73.9	26	0	,	,	,	0	0	0	0
27	21 09.7 +24.1	70.2	21 29.8 +25.1	70.6	21 49.6 +26.0	70.9	22 09.0 +26.9	71.3	22 28.0 +27.9	71.7	22 46.6 +28.9	72.1	23 04.8 +29.8	72.5	23 22.6 +30.8	72.9	27	0	,	,	,	0	0	0	0
28	21 33.8 +23.7	69.2	21 54.9 +24.7	69.6	22 15.6 +25.7	70.0	22 35.9 +26.7	70.4	22 55.9 +27.6	70.8	23 15.5 +28.5	71.2	23 34.6 +29.5	71.6	23 53.4 +30.4	72.0	28	0	,	,	,	0	0	0	0
29	21 57.5 +23.4	68.2	22 19.6 +24.3	68.6	22 41.3 +25.3	69.0	23 02.6 +26.2	69.4	23 25.3 +27.2	69.8	23 44.0 +28.2	70.2	24 04.1 +29.2	70.6	24 23.8 +30.1	71.0	29	0	,	,	,	0	0	0	0
30	22 20.9 +23.0	67.2	22 43.9 +24.0	67.6	23 06.6 +24.9	68.0	23 28.8 +26.0	68.4	23 50.7 +26.9	68.8	24 12.2 +27.8	69.2	24 33.3 +28.7	69.7	24 53.9 +29.7	70.1	30	0	,	,	,	0	0	0	0
31	22 43.9 +22.7	66.2	23 07.9 +23.6	66.6	23 31.5 +24.6	67.0	23 54.8 +25.5	67.4	24 17.6 +26.5	67.8	24 40.0 +27.4	68.3	25 02.0 +28.4	68.7	25 23.6 +29.3	69.1	31	0	,	,	,	0	0	0	0
32	23 06.6 +22.2	65.2	23 31.5 +23.3	65.6	23 56.1 +24.2	66.0	24 20.3 +25.1	66.4	24 44.1 +26.1	66.9	25 07.4 +27.1	67.3	25 30.4 +28.0	67.7	25 52.9 +29.0	68.2	32	0	,	,	,	0	0	0	0
33	23 28.8 +21.9	64.2	23 54.8 +22.8	64.6	24 20.3 +23.8	65.0	24 45.4 +24.8	65.4	25 10.2 +25.6	65.9	25 34.5 +26.6	66.3	25 58.4 +27.6	66.7	26 21.9 +28.5	67.2	33	0	,	,	,	0	0	0	0
34	23 50.7 +21.5	63.2	24 17.2 +22.4	63.6	24 44.1 +23.4	64.0	25 10.2 +24.3	64.5	25 35.8 +25.3	64.9	26 01.1 +26.3	65.3	26 24.5 +26.7	64.8	27 18.5 +27.7	65.2	35	0	,	,	,	0	0	0	0
35	24 12.2 +21.1	62.2	24 40.0 +22.0	62.6	25 07.4 +23.0	63.0	25 34.5 +23.9	63.4	26 01.1 +24.9	63.9	26 27.4 +25.8	64.3	26 53.2 +26.7	64.8	27 19.5 +27.7	65.2	35	0	,	,	,	0	0	0	0
36	24 33.3 +20.6	61.2	25 02.0 +21.6	61.6	25 30.4 +22.5	62.0	25 5																		

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 80°, 280°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	8 39.0 -30.5	95.0	8 33.6 -31.3	95.2	8 28.1 -32.2	95.3	8 22.4 -33.0	95.5	8 16.6 -33.9	95.6	8 10.7 -34.9	95.8	8 04.6 -35.7	95.9	7 58.3 -36.5	96.1	7 21.8 -36.6	96.9	7 28.9 -35.8	96.7	7 21.8 -36.6	96.9	7 28.9 -35.8	96.7	0
1	8 08.5 -30.5	95.9	8 02.3 -31.4	96.1	7 55.9 -32.3	96.2	7 49.4 -33.2	96.3	7 42.7 -34.1	96.5	7 35.8 -34.9	96.6	7 28.9 -35.8	96.7	6 53.1 -35.8	97.5	6 45.2 -36.7	97.7	6 53.1 -35.8	97.5	6 45.2 -36.7	97.7	6 53.1 -35.8	97.5	1
2	7 38.0 -30.6	96.8	7 30.9 -31.5	96.9	7 23.6 -32.4	97.0	7 16.2 -33.3	97.2	7 08.6 -34.1	97.3	7 00.9 -35.0	97.4	6 53.1 -35.8	97.5	6 17.3 -35.9	98.3	6 08.5 -36.7	98.5	6 17.3 -35.9	98.3	6 08.5 -36.7	98.5	6 17.3 -35.9	98.3	2
3	7 07.4 -30.7	97.6	6 59.4 -31.6	97.8	6 51.2 -32.5	97.9	6 42.9 -33.4	98.0	6 34.5 -34.2	98.1	6 25.9 -35.0	98.2	6 17.3 -35.9	98.3	5 50.9 -35.2	99.1	5 41.4 -36.0	99.2	5 31.8 -36.8	99.2	5 31.8 -36.8	99.2	5 31.8 -36.8	99.2	4
4	6 36.7 -30.8	98.5	6 27.8 -31.7	98.6	6 18.7 -32.6	98.7	6 09.5 -33.4	98.8	6 00.3 -34.3	98.9	5 50.9 -35.2	99.1	5 15.7 -35.2	99.9	5 05.4 -36.0	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	5
5	6 05.9 -30.9	99.4	5 56.1 -31.8	99.5	5 46.1 -32.6	99.6	5 36.1 -33.5	99.7	5 26.0 -34.4	99.8	5 15.7 -35.2	99.9	5 05.4 -36.0	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	4 55.0 -36.9	100.0	5
6	5 35.0 -31.0	100.2	5 24.3 -31.8	100.3	5 13.5 -32.7	100.4	5 02.6 -33.6	100.5	4 51.6 -34.4	100.6	4 40.5 -35.2	100.7	4 29.4 -36.1	100.8	4 18.1 -36.9	100.8	4 08.4 -37.1	100.8	4 18.1 -36.9	100.8	4 18.1 -36.9	100.8	4 18.1 -36.9	100.8	6
7	5 04.0 -31.0	101.1	4 52.5 -32.0	101.2	4 40.8 -32.8	101.3	4 29.0 -33.6	101.3	4 17.2 -34.5	101.4	4 05.3 -35.4	101.5	3 53.3 -36.2	101.6	3 41.2 -36.9	101.6	3 04.3 -37.0	102.4	3 17.1 -36.1	102.4	3 04.3 -37.0	102.4	3 17.1 -36.1	102.4	8
8	4 33.0 -31.1	102.0	4 20.5 -31.9	102.0	4 08.0 -32.8	102.1	3 55.4 -33.7	102.2	3 42.7 -34.5	102.2	3 29.9 -35.3	102.3	3 17.1 -36.1	102.4	3 04.3 -37.0	102.4	3 17.1 -36.1	102.4	3 04.3 -37.0	102.4	3 17.1 -36.1	102.4	8		
9	4 01.9 -31.1	102.8	3 48.6 -32.0	102.9	3 35.2 -32.9	102.9	3 21.7 -33.7	103.0	3 08.2 -34.6	103.1	2 45.6 -35.4	103.1	2 41.0 -36.2	103.2	2 27.3 -37.0	103.2	2 27.3 -37.0	103.2	2 27.3 -37.0	103.2	2 27.3 -37.0	103.2	9		
10	3 30.8 -31.2	103.7	3 16.6 -32.1	103.7	3 02.3 -32.9	103.8	2 48.0 -33.8	103.8	2 33.6 -34.6	103.9	2 19.2 -35.4	103.9	2 04.8 -36.3	104.0	1 50.3 -37.1	104.0	1 50.3 -37.1	104.0	1 50.3 -37.1	104.0	1 50.3 -37.1	104.0	10		
11	2 59.6 -31.2	104.5	2 44.5 -32.1	104.6	2 29.4 -32.9	104.6	2 14.2 -33.8	104.7	1 59.0 -34.6	104.7	1 43.8 -35.4	104.7	1 28.5 -36.2	104.8	1 13.2 -37.0	104.8	1 13.2 -37.0	104.8	1 13.2 -37.0	104.8	1 13.2 -37.0	104.8	11		
12	2 28.4 -31.3	105.4	2 12.4 -32.1	105.4	1 56.5 -33.0	105.5	1 40.4 -33.8	105.5	1 24.4 -34.6	105.5	1 08.4 -35.5	105.5	0 52.3 -36.3	105.5	0 36.2 -37.1	105.6	0 36.2 -37.1	105.6	0 36.2 -37.1	105.6	0 36.2 -37.1	105.6	12		
13	1 57.1 -31.3	106.2	1 40.3 -32.1	106.3	1 23.5 -33.0	106.3	1 06.6 -33.8	106.3	0 49.8 -34.7	106.3	0 32.8 -33.8	107.1	0 15.1 -34.6	107.1	0 02.5 +35.5	72.9	0 20.2 +36.3	72.9	0 37.9 +37.1	72.9	0 37.9 +37.1	72.9	0 37.9 +37.1	72.9	14
14	1 25.8 -31.3	107.1	1 08.2 -32.2	107.1	0 50.5 -33.0	107.1	0 32.8 -33.8	107.1	0 15.1 -34.6	107.1	0 01.0 +33.8	72.0	0 19.5 +34.6	72.0	0 38.0 +35.5	72.0	0 56.5 +36.2	72.1	1 15.0 +37.0	72.1	1 15.0 +37.0	72.1	1 15.0 +37.0	72.1	15
15	0 54.5 -31.3	107.9	0 36.0 -32.2	108.0	0 17.5 -33.0	108.0	0 0.0 +33.8	71.2	0 54.1 +34.7	71.2	1 13.5 +35.4	71.2	1 32.7 +36.3	71.3	1 52.0 +37.0	71.3	1 52.0 +37.0	71.3	1 52.0 +37.0	71.3	1 52.0 +37.0	71.3	16		
16	0 23.2 -31.4	108.8	0 0.8 -32.1	108.8	0 15.5 +33.0	71.2	0 34.8 +33.8	71.2	0 54.1 +34.7	71.2	2 49.0 +35.4	71.2	2 29.0 +37.0	70.5	3 06.0 +36.9	69.7	3 42.9 +36.9	68.9	3 42.9 +36.9	68.9	3 42.9 +36.9	68.9	19		
17	0 08.2 +31.3	70.4	0 28.3 +32.2	70.4	0 48.5 +33.0	70.4	1 08.6 +33.8	70.4	1 28.8 +34.6	70.4	1 48.9 +35.4	70.4	2 09.0 +36.2	70.5	2 29.0 +37.0	70.5	3 06.0 +36.9	69.7	4 56.7 +36.8	67.3	4 56.7 +36.8	67.3	4 56.7 +36.8	67.3	17
18	0 39.5 +31.3	69.5	1 00.5 +32.1	69.5	1 21.5 +32.9	69.5	1 42.4 +33.8	69.6	2 03.4 +34.6	69.6	2 24.3 +35.4	69.6	2 45.2 +36.1	69.7	3 06.0 +36.9	69.7	3 06.0 +36.9	69.7	3 06.0 +36.9	69.7	3 06.0 +36.9	69.7	18		
19	1 10.8 +31.3	68.6	1 32.6 +32.2	68.7	1 54.4 +33.0	68.7	2 16.2 +33.8	68.7	2 38.0 +34.5	68.8	2 59.7 +35.3	68.8	3 21.3 +36.2	68.9	3 42.9 +36.9	68.9	3 42.9 +36.9	68.9	3 42.9 +36.9	68.9	3 42.9 +36.9	68.9	19		
20	1 42.1 +31.3	67.8	2 04.8 +32.1	67.8	2 27.4 +32.9	67.9	2 50.0 +33.7	67.9	3 12.5 +34.5	68.0	3 35.0 +35.3	68.0	3 57.5 +36.1	68.1	4 19.8 +36.9	68.1	4 19.8 +36.9	68.1	4 19.8 +36.9	68.1	4 19.8 +36.9	68.1	20		
21	2 13.4 +31.2	66.9	2 36.9 +32.0	67.0	3 00.3 +32.9	67.0	3 23.7 +33.7	67.1	3 47.0 +34.5	67.1	4 10.3 +35.7	67.2	4 33.6 +36.0	67.3	5 56.7 +36.8	67.3	5 56.7 +36.8	67.3	5 56.7 +36.8	67.3	5 56.7 +36.8	67.3	21		
22	2 44.6 +31.2	66.1	3 08.9 +32.1	66.1	3 33.2 +32.8	66.2	3 57.4 +33.6	66.2	4 21.5 +34.4	66.3	4 45.6 +35.6	66.4	5 09.6 +36.6	66.5	6 10.2 +36.7	65.8	6 46.9 +36.6	65.0	6 46.9 +36.6	65.0	6 46.9 +36.6	65.0	22		
23	3 15.8 +31.2	65.2	3 41.0 +31.9	65.3	4 06.0 +32.8	65.3	4 31.0 +33.6	65.4	4 55.9 +34.4	65.5	5 20.8 +35.1	65.6	5 45.6 +35.9	65.7	6 10.2 +36.7	65.8	6 46.9 +36.6	65.0	6 46.9 +36.6	65.0	6 46.9 +36.6	65.0	23		
24	3 47.0 +31.1	64.4	4 12.9 +31.9	64.4	4 38.8 +32.7	64.5	5 04.6 +33.5	64.6	5 30.3 +34.3	64.7	5 55.9 +35.1	64.8	6 21.5 +34.8	64.9	7 47.0 +33.9	64.9	8 44.3 +35.4	64.6	9 12.7 +36.2	61.8	9 12.7 +36.2	61.8	9 12.7 +36.2	61.8	24
25	4 18.1 +31.1	63.5	4 44.8 +31.9	63.6	5 11.5 +32.7	63.7	5 38.1 +33.4	63.7	6 04.6 +34.2	63.8	6 31.0 +35.0	63.9	6 57.3 +35.7	64.0	7 23.5 +36.5	64.2	8 36.4 +36.3	63.4	8 00.0 +36.4	63.4	8 00.0 +36.4	63.4	8 00.0 +36.4	63.4	25
26	4 49.2 +31.0	62.7	5 16.7 +31.8	62.7	5 44.2 +32.5	62.8	6 11.5 +33.4	62.9	6 38.8 +34.1	63.0	7 06.0 +34.9	63.1	7 33.0 +35.7	63.2	8 00.0 +36.4	63.2	8 00.0 +36.4	63.2	8 00.0 +36.4	63.2	8 00.0 +36.4	63.2	26		
27	5 20.2 +30.9	61.8	5 48.5 +31.7	61.9	6 16.7 +32.5	62.0	6 44.9 +33.2	62.1	7 12.9 +34.1	62.2	7 40.9 +34.8	62.3	8 08.7 +35.6	62.4	9 36.4 +36.3	62.6	10 00.0 +36.3	62.7	10 20.2 +36.3	62.7	10 20.2 +36.3	62.7	10 20.2 +36.3	62.7	27
28	5 51.1 +30.8	60.9	6 20.2 +31.6	61.0	6 12.0 +29.9	61.1	6 49.2 +33.2	61.2	7 17.0 +34.7	61.3	7 47.0 +34.8	61.4	8 17.2 +35.6	61.5	9 30.1 +35.4	61.6	10 01.0 +35.1	59.2	11 01.0 +35.8	59.3	11 01.0 +35.8	59.3	11 01.0 +35.8	59.3	31
29	6 54.7 +30.5	59.5	7 23.4 +31.4	59.5	7 10.8 +32.3	59.5	7 50.0 +32.3	59.5	8 54.7 +33.8	59.5	9 28.5 +34.4	59.5	10 03.0 +35.1	59.2	11 01.0 +35.8	59.3	11 01.0 +35.8	59.3	11 01.0 +35.8	59.3	11 01.0 +35.8	59.3	32		
30	7 55.0 +30.0	59.0	10 30.3 +30.7	54.1	11 05.4 +31.4	54.3	11 40.3 +32.2	54.4	12 15.1 +32.9	54.6	12 49.8 +33.6	54.8	13 24.3 +34.4	55.0	13 58.7 +35.0	55.2	13 58.7 +35.0	55.2	13 58.7 +35.0	55.2	13 58.7 +35.0	55.2	36		
31	10 25.0 +29.8	53.1	11 01.0 +30.5	53.3	11 36.8 +31.3	53.4	12 12.5 +32.0	53.6	12 48.0 +32.8	53.8	13 23.4 +33.5	53.9													

81°, 279° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.	
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z		
0	7 47.2 +30.2	94.5	7 42.4 +31.1	94.7	7 37.4 +32.0	94.8	7 32.3 +32.9	94.9	7 27.1 +33.8	95.1	7 21.7 +34.7	95.2	7 16.2 +35.6	95.3	7 10.6 +36.4	95.4	7 10.6 +36.4	95.4	0	o	o	o	o	o	o	o
1	8 17.4 +30.1	93.7	8 13.5 +31.0	93.8	8 09.4 +32.0	93.9	8 05.2 +32.8	94.1	8 00.9 +33.7	94.2	8 56.4 +34.6	94.4	7 51.8 +35.4	94.5	7 47.0 +36.2	94.6	7 47.0 +36.2	94.6	1	o	o	o	o	o	o	o
2	8 47.5 +30.0	92.8	8 44.5 +30.9	92.9	8 41.4 +31.8	93.1	8 38.0 +32.7	93.2	8 34.6 +33.6	93.4	8 31.0 +34.4	93.5	8 27.2 +35.3	93.7	8 23.2 +36.2	93.8	8 23.2 +36.2	93.8	2	o	o	o	o	o	o	o
3	9 17.5 +29.9	91.9	9 15.4 +30.8	92.1	9 13.2 +31.6	92.2	9 10.7 +32.6	92.4	9 08.2 +33.4	92.6	9 05.4 +34.3	92.7	9 02.5 +35.2	92.9	8 59.4 +36.0	93.0	8 59.4 +36.0	93.0	3	o	o	o	o	o	o	o
4	9 47.4 +29.7	91.0	9 46.2 +30.6	91.2	9 44.8 +31.6	91.4	9 43.3 +32.5	91.5	9 41.6 +33.4	91.7	9 39.7 +34.3	91.9	9 37.7 +35.1	92.1	9 35.4 +36.0	92.2	9 35.4 +36.0	92.2	4	o	o	o	o	o	o	o
5	10 17.1 +29.6	90.1	10 16.8 +30.5	90.3	10 16.4 +31.4	90.5	10 15.8 +32.3	90.7	10 15.0 +33.2	90.9	10 14.0 +34.1	91.0	10 12.8 +34.9	91.2	10 11.4 +35.8	91.4	10 11.4 +35.8	91.4	5	o	o	o	o	o	o	o
6	10 46.7 +29.4	89.3	10 47.3 +30.4	89.4	10 47.8 +31.3	89.6	10 48.1 +32.2	89.8	10 48.2 +33.0	90.0	10 48.1 +33.9	90.2	10 47.7 +34.9	90.4	10 47.2 +35.7	90.6	10 47.2 +35.7	90.6	6	o	o	o	o	o	o	o
7	11 16.1 +29.3	88.4	11 17.7 +30.2	88.6	11 19.1 +31.1	88.8	11 20.3 +32.0	89.0	11 21.2 +33.0	89.2	11 22.0 +33.8	89.4	11 22.6 +34.7	89.6	11 22.9 +35.6	89.8	11 22.9 +35.6	89.8	7	o	o	o	o	o	o	o
8	11 45.4 +29.1	87.5	11 47.9 +30.0	87.7	11 50.2 +31.0	87.9	11 52.3 +31.9	88.1	11 54.2 +32.7	88.3	11 55.8 +33.7	88.5	11 57.3 +34.5	88.7	11 58.5 +35.4	89.0	11 58.5 +35.4	89.0	8	o	o	o	o	o	o	o
9	12 14.5 +28.3	86.6	12 17.9 +29.9	86.8	12 21.2 +30.7	87.0	12 24.2 +31.7	87.2	12 26.9 +32.6	87.5	12 29.5 +33.5	87.7	12 31.8 +34.4	87.9	12 33.9 +35.2	88.1	12 33.9 +35.2	88.1	9	o	o	o	o	o	o	o
10	12 43.4 +28.7	85.7	12 47.8 +29.7	85.9	12 51.9 +30.7	86.1	12 55.9 +31.5	86.4	12 59.5 +32.5	86.6	13 03.0 +33.3	86.8	13 06.2 +34.2	87.1	13 09.1 +35.1	87.3	13 09.1 +35.1	87.3	10	o	o	o	o	o	o	o
11	13 12.1 +28.6	84.8	13 17.5 +29.5	85.0	13 22.6 +30.4	85.3	13 27.4 +31.3	85.5	13 32.0 +32.2	85.7	13 36.3 +33.2	86.0	13 40.4 +34.1	86.2	13 44.2 +35.0	86.5	13 44.2 +35.0	86.5	11	o	o	o	o	o	o	o
12	13 40.7 +28.4	83.9	13 47.0 +29.3	84.1	13 53.0 +30.2	84.4	13 58.7 +31.2	84.6	14 04.2 +32.1	84.9	14 09.5 +33.0	85.1	14 14.5 +33.8	85.4	14 19.2 +34.7	85.6	14 19.2 +34.7	85.6	12	o	o	o	o	o	o	o
13	14 09.1 +28.1	83.0	14 16.3 +29.1	83.2	14 23.2 +30.1	83.5	14 29.9 +31.0	83.7	14 36.3 +31.9	84.0	14 42.5 +32.7	84.3	14 48.3 +33.7	84.5	14 53.9 +34.6	84.8	14 53.9 +34.6	84.8	13	o	o	o	o	o	o	o
14	14 37.2 +28.0	82.1	14 45.4 +28.9	82.3	14 53.3 +29.8	82.6	15 00.9 +30.7	82.8	15 08.2 +31.7	83.1	15 15.2 +32.6	83.4	15 22.0 +33.5	83.7	15 28.5 +34.4	83.9	15 28.5 +34.4	83.9	14	o	o	o	o	o	o	o
15	15 05.2 +27.7	81.1	15 14.3 +28.6	81.4	15 23.1 +29.6	81.7	15 31.6 +30.5	82.0	15 39.9 +31.4	82.2	15 47.8 +32.4	82.5	15 55.5 +33.3	82.8	16 02.9 +34.1	83.1	16 02.9 +34.1	83.1	15	o	o	o	o	o	o	o
16	15 32.9 +27.5	80.2	15 42.9 +28.5	80.5	15 52.7 +29.4	80.8	16 02.1 +30.4	81.1	16 11.3 +31.3	81.4	16 20.2 +32.1	81.6	16 28.8 +33.0	81.9	16 37.0 +34.0	82.2	16 37.0 +34.0	82.2	16	o	o	o	o	o	o	o
17	16 00.4 +27.2	79.3	16 11.4 +28.2	79.6	16 22.1 +29.1	79.9	16 32.5 +30.0	80.2	16 42.6 +31.0	80.5	16 52.3 +32.0	80.8	17 01.8 +32.9	81.1	17 11.0 +33.7	81.4	17 11.0 +33.7	81.4	17	o	o	o	o	o	o	o
18	16 27.6 +27.0	78.4	16 39.6 +27.9	78.7	16 51.2 +28.9	79.0	17 02.5 +29.9	79.3	17 13.6 +30.7	79.6	17 24.3 +31.7	79.9	17 34.7 +32.6	80.2	17 44.7 +33.5	80.5	17 44.7 +33.5	80.5	18	o	o	o	o	o	o	o
19	16 54.6 +26.8	77.4	17 07.5 +27.7	77.7	17 20.1 +28.7	78.0	17 32.4 +29.6	78.4	17 44.3 +30.6	78.7	17 56.0 +31.4	79.0	18 07.3 +32.3	79.3	18 18.2 +33.3	79.6	18 18.2 +33.3	79.6	19	o	o	o	o	o	o	o
20	17 21.4 +26.5	76.5	17 35.2 +27.5	76.8	17 48.8 +28.4	77.1	18 02.0 +29.3	77.4	18 14.9 +30.2	77.8	18 27.4 +31.2	78.1	18 39.6 +32.1	78.4	18 51.5 +33.0	78.7	18 51.5 +33.0	78.7	20	o	o	o	o	o	o	o
21	17 47.9 +26.2	75.6	18 07.2 +27.1	75.9	18 17.2 +28.1	76.2	18 31.3 +29.1	76.5	18 45.1 +30.0	76.8	18 58.6 +30.9	77.2	19 11.7 +31.9	77.5	19 24.5 +32.8	77.9	19 24.5 +32.8	77.9	21	o	o	o	o	o	o	o
22	18 14.1 +25.9	74.6	18 29.8 +26.9	74.9	18 45.3 +27.8	75.3	19 00.4 +28.8	75.6	19 15.1 +29.7	75.9	19 29.5 +30.7	76.3	19 43.6 +31.6	76.6	19 57.3 +32.5	77.0	19 57.3 +32.5	77.0	22	o	o	o	o	o	o	o
23	18 40.0 +25.7	73.7	18 56.7 +26.6	74.0	19 13.1 +27.6	74.3	19 29.2 +28.5	74.7	19 44.8 +29.5	75.0	20 00.2 +30.4	75.4	20 15.2 +31.3	75.7	20 29.8 +32.2	76.1	20 29.8 +32.2	76.1	23	o	o	o	o	o	o	o
24	19 05.7 +25.3	72.7	19 23.3 +26.4	73.0	19 40.7 +27.2	73.4	19 57.7 +28.2	73.7	20 14.3 +29.1	74.1	20 30.6 +30.0	74.4	20 46.5 +31.0	74.8	21 02.0 +31.9	75.2	21 02.0 +31.9	75.2	24	o	o	o	o	o	o	o
25	19 31.0 +25.1	71.8	19 49.7 +26.0	72.1	20 07.9 +27.0	72.4	20 25.9 +27.9	72.8	20 43.4 +28.9	73.2	21 06.6 +29.8	73.5	21 17.5 +30.7	73.9	21 33.9 +31.7	74.3	21 33.9 +31.7	74.3	25	o	o	o	o	o	o	o
26	19 56.1 +24.7	70.8	20 15.7 +25.6	71.1	20 34.9 +26.5	71.6	20 53.8 +27.5	71.8	21 12.3 +28.5	72.2	21 30.4 +29.5	72.6	21 48.2 +30.4	73.0	22 05.6 +31.3	73.4	22 05.6 +31.3	73.4	26	o	o	o	o	o	o	o
27	20 20.8 +24.4	69.8	20 41.3 +25.4	70.2	21 01.5 +26.3	70.5	21 21.3 +27.3	70.9	21 40.8 +28.2	71.3	21 59.9 +29.1	71.6	22 18.6 +30.1	72.0	22 36.9 +31.0	72.4	22 36.9 +31.0	72.4	27	o	o	o	o	o	o	o
28	20 45.2 +24.1	68.8	21 06.7 +25.0	69.2	21 27.8 +26.0	69.6	21 48.6 +26.9	69.9	22 09.0 +27.9	70.3	22 29.0 +28.7	70.7	22 48.7 +29.7	71.1	23 07.9 +30.7	71.5	23 07.9 +30.7	71.5	28	o	o	o	o	o	o	o
29	21 09.3 +23.7	67.9	21 31.7 +24.7	68.2	21 53.8 +25.7	68.6	22 15.5 +26.6	69.0	22 36.9 +27.5	69.4	22 57.8 +28.5	69.8	23 18.4 +29.4	70.2	23 38.6 +30.3	70.6	23 38.6 +30.3	70.6	29	o	o	o	o	o	o	o
30	23 54.4 +22.5	62.3	24 22.2 +23.4	62.6	24 49.6 +24.3	63.1	25 16.5 +25.3	63.5	25 43.1 +26.2	63.6	25 69.3 +27.2	64.3	26 35.1 +28.1	64.8	26 35.1 +28.1	64.8	35	o	o	o	o	o	o	o		
31	24 16.9 +22.0	61.2	24 45.6 +22.9	61.6	25 13.9 +23.9	62.0	25 41.8 +24.8	62.5	26 09.3 +25.8	62.9	26 36.5 +26.7	63.3	27 03.2 +27.6	63.8	27 03.2 +27.6	63.8	36	o	o	o	o	o	o	o		
32	24 08.9 +20.7	59.8	24 38.9 +21.6	60.2	25 08.5 +22.6	60.6	25 37.8 +23.5	61.0	26 06.6 +24.4	61.4	26 35.1 +25.4	61.9	27 03.2 +26.2	62.3	27 30.8 +27.2	62.8	27 30.8 +27.2	62.8	37	o	o	o	o	o	o	o
33	24 29.6 +20.3	58.8	25 00.5 +21.2	59.2	25 31.1 +22.1	59.6	26 01.3 +23.0	60.0																		

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 81° , 279°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.					
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z						
0	7 47.2 -30.4	94.5	7 42.4 -31.3	94.7	7 37.4 -32.1	94.8	7 32.3 -33.0	94.9	7 27.1 -33.9	95.1	7 21.7 -34.7	95.2	7 16.2 -35.6	95.3	7 10.6 -36.4	95.4	0	7 47.2 -30.4	95.4	7 10.6 -36.4	95.4	6 34.2 -36.5	96.2	1						
1	7 16.8 -30.4	95.4	7 11.1 -31.3	95.5	7 05.3 -32.2	95.6	6 59.3 -33.1	95.8	6 53.2 -34.0	95.9	6 47.0 -34.8	96.0	6 40.6 -35.6	96.1	5 57.7 -36.6	97.0	2	6 46.4 -30.5	96.3	6 34.2 -36.5	96.2	6 34.2 -36.5	96.2	5 57.7 -36.6	97.0	3				
2	6 46.4 -30.5	96.3	6 39.8 -31.4	96.4	6 33.1 -32.3	96.5	6 26.2 -33.2	96.6	6 19.2 -34.0	96.7	6 12.2 -34.9	96.8	6 05.0 -35.8	96.9	5 21.1 -36.6	97.8	3	6 15.9 -30.6	97.1	6 08.4 -31.5	97.2	5 45.2 -34.1	97.6	5 29.2 -35.8	97.7	4				
4	5 45.3 -30.7	98.0	5 36.9 -31.6	98.1	5 28.4 -32.5	98.2	5 19.8 -33.3	98.3	5 11.1 -34.2	98.4	5 02.3 -35.0	98.5	4 53.4 -35.9	98.6	4 44.5 -36.7	98.6	4	5 14.6 -30.8	98.9	5 05.3 -31.6	99.0	4 46.5 -33.4	99.1	4 27.3 -35.1	99.3	5				
5	5 14.6 -30.8	98.9	5 05.3 -31.6	99.0	4 55.9 -32.5	99.0	4 46.5 -33.4	99.1	4 36.9 -34.2	99.2	4 27.3 -35.1	99.3	4 17.5 -35.9	99.4	4 07.8 -36.8	99.4	5	4 43.8 -30.8	99.7	4 33.7 -31.7	99.8	4 02.7 -34.3	100.0	3 41.6 -35.9	100.2	6				
6	4 43.8 -30.8	99.7	4 33.7 -31.7	99.8	4 23.4 -32.6	99.9	4 13.1 -33.5	100.0	4 02.7 -34.3	100.0	3 52.2 -35.2	100.1	3 41.6 -35.9	100.2	3 31.0 -36.8	100.2	6	4 13.0 -30.9	100.6	4 02.0 -31.8	100.7	3 28.4 -34.4	100.8	3 17.0 -35.1	100.9	7				
7	4 13.0 -30.9	100.6	4 02.0 -31.8	100.7	3 50.8 -32.6	100.7	3 39.6 -33.5	100.8	3 28.4 -34.4	100.8	3 17.0 -35.1	100.9	3 05.7 -36.0	101.0	2 54.2 -36.8	101.0	7	3 42.1 -30.9	101.4	3 30.2 -31.8	101.5	2 45.0 -33.5	101.7	2 29.7 -36.1	101.8	8				
8	3 42.1 -30.9	101.4	3 30.2 -31.8	101.5	3 18.2 -32.7	101.6	3 06.1 -33.5	101.6	2 54.0 -34.3	101.7	2 41.9 -35.2	101.7	2 06.7 -36.3	102.5	1 53.6 -36.0	102.6	1	3 11.2 -31.0	102.3	2 58.4 -31.8	102.4	2 19.7 -34.4	102.5	1 40.6 -36.9	102.6	9				
9	3 11.2 -31.0	102.3	2 58.4 -31.8	102.4	2 45.5 -32.7	102.4	2 32.6 -33.5	102.4	2 19.7 -34.4	102.5	2 06.7 -35.3	102.5	1 40.6 -36.9	102.6	1 03.7 -36.9	103.4	10	2 40.2 -31.0	103.2	2 26.6 -31.9	103.2	1 51.3 -34.2	103.3	1 17.6 -36.1	103.4	10				
10	2 40.2 -31.0	103.2	2 26.6 -31.9	103.2	2 12.8 -32.7	103.2	1 59.1 -33.6	103.3	1 45.3 -34.4	103.3	1 31.4 -35.2	103.3	1 17.6 -36.1	103.4	1 03.7 -36.9	103.4	10	2 09.2 -31.0	104.0	1 54.7 -31.9	104.1	1 40.1 -32.8	104.1	0 41.5 -36.1	104.2	11				
11	1 38.2 -31.1	104.9	1 22.8 -31.9	104.9	1 07.3 -32.7	104.9	0 51.9 -33.6	104.9	0 36.4 -34.4	104.9	0 20.9 -35.2	105.0	0 05.4 -36.0	105.0	0 10.0 -36.9	105.0	12	1 38.2 -31.1	104.9	1 22.8 -31.9	104.9	0 18.3 -32.8	106.6	0 15.3 -33.6	106.6	13				
12	1 38.2 -31.1	104.9	1 22.8 -31.9	104.9	1 07.3 -32.7	104.9	0 50.9 -32.0	105.7	0 18.3 -32.8	105.8	0 02.0 -34.5	105.8	0 14.3 -33.6	105.8	0 30.6 -36.1	105.8	13	1 05.0 -31.1	107.4	0 13.0 +31.9	72.6	0 48.9 +33.6	72.6	1 24.8 +35.3	72.6	14				
13	1 07.1 -31.0	105.7	0 50.9 -32.0	105.7	0 18.3 -32.8	106.6	0 01.8 -32.8	106.6	0 15.3 -33.6	106.6	0 32.5 +34.4	73.4	0 49.6 +35.2	73.4	1 06.7 +36.0	73.4	12	0 10.0 -31.0	71.7	0 44.9 +31.9	71.7	1 03.7 +32.8	71.7	2 00.6 +36.9	75.0	12				
14	0 36.1 -31.1	106.6	0 18.9 -31.0	106.6	0 01.8 -32.8	106.6	0 15.3 -33.6	106.6	0 14.3 -33.6	106.6	0 32.5 +34.4	73.4	0 49.6 +35.2	73.4	1 06.7 +36.0	73.4	12	0 05.0 -31.1	107.4	0 13.0 +31.9	72.6	0 48.9 +33.6	72.6	1 23.8 +36.8	104.2	11				
15	0 05.0 -31.1	107.4	0 13.0 +31.9	72.6	0 31.0 +32.7	72.6	0 06.9 +34.4	72.6	1 24.8 +35.3	72.6	1 42.7 +36.1	72.6	2 00.6 +36.9	72.7	2 00.6 +36.9	72.7	15	0 26.1 +31.1	71.7	0 44.9 +31.9	71.7	1 03.7 +32.8	71.7	2 37.5 +36.8	71.9	16				
16	0 26.1 +31.1	71.7	0 44.9 +31.9	71.7	1 03.7 +32.8	71.7	1 22.5 +33.6	71.8	1 41.3 +34.4	71.8	2 00.1 +35.2	71.8	2 18.8 +36.0	71.8	3 14.3 +36.7	71.1	17	0 57.2 +31.0	70.8	1 16.8 +31.9	70.9	1 36.5 +32.7	70.9	2 15.7 +34.4	71.0	18				
17	0 57.2 +31.0	70.8	1 16.8 +31.9	70.9	1 36.5 +32.7	70.9	1 56.1 +33.6	70.9	2 15.7 +34.4	71.0	2 35.3 +35.2	71.0	2 54.8 +36.0	71.0	3 51.0 +36.7	70.3	18	1 28.2 +31.1	70.0	1 48.7 +31.9	70.0	2 09.2 +32.7	70.1	3 10.8 +35.9	70.2	19				
18	1 28.2 +31.1	70.0	1 48.7 +31.9	70.0	2 09.2 +32.7	70.1	2 29.7 +33.5	70.1	2 50.1 +34.3	70.1	3 10.5 +35.1	70.2	3 30.8 +35.9	70.2	3 51.0 +36.7	70.3	18	1 59.3 +31.0	69.1	2 20.6 +31.9	69.2	3 24.4 +34.3	69.3	3 45.6 +35.1	69.4	19				
19	1 59.3 +31.0	69.1	2 20.6 +31.9	69.2	3 24.4 +32.7	69.2	3 03.2 +33.5	69.3	3 24.4 +34.3	69.3	3 07.2 +34.1	69.6	5 30.7 +34.7	69.6	4 60.7 +35.9	69.4	19	2 30.3 +31.0	68.3	2 52.5 +31.8	68.3	3 14.6 +32.6	68.4	3 58.7 +34.3	68.5	20				
20	2 30.3 +31.0	68.3	2 52.5 +31.8	68.3	3 14.6 +32.6	68.4	3 36.7 +33.4	68.4	3 58.7 +34.3	68.5	4 20.7 +35.0	68.6	4 42.6 +35.8	68.6	5 04.4 +36.6	68.7	20	2 03.1 +30.9	67.4	3 24.3 +31.7	67.5	3 47.2 +32.6	67.5	4 51.0 +36.0	67.8	21				
21	3 03.1 +30.9	67.4	3 24.3 +31.7	67.5	3 47.2 +32.6	67.5	4 10.1 +33.4	67.6	4 33.0 +34.2	67.7	4 55.7 +35.0	67.7	5 18.4 +35.8	67.8	5 54.2 +35.7	67.0	21	3 32.2 +30.9	66.6	4 19.8 +32.5	66.7	5 43.5 +33.4	66.8	6 17.6 +34.4	67.1	22				
22	3 32.2 +30.9	66.6	4 19.8 +32.5	66.6	4 43.5 +33.4	66.7	5 07.2 +34.1	66.8	5 30.7 +34.7	66.9	5 54.2 +35.7	67.0	6 17.6 +34.4	67.1	6 54.0 +36.4	66.3	23	4 03.1 +30.9	65.7	4 27.8 +31.6	65.8	4 52.3 +32.5	65.9	5 13.0 +33.6	65.8	23				
23	4 03.1 +30.9	65.7	4 27.8 +31.6	65.8	4 52.3 +32.5	65.8	5 16.9 +33.2	65.9	5 41.3 +34.0	66.0	6 05.6 +34.9	66.1	6 29.9 +35.6	66.2	6 54.0 +36.4	66.3	23	4 34.0 +30.7	64.8	4 59.4 +31.6	64.9	5 24.8 +32.4	65.0	7 05.5 +35.5	65.4	24				
24	4 34.0 +30.7	64.8	4 59.4 +31.6	64.9	5 24.8 +32.4	65.0	5 50.1 +33.2	65.1	6 15.3 +34.0	65.2	6 40.5 +34.7	65.3	7 41.0 +35.5	64.6	8 06.7 +36.2	64.7	25	5 04.7 +30.7	64.0	5 31.0 +31.5	64.1	5 57.2 +32.3	64.2	6 15.0 +34.7	64.3	25				
25	5 04.7 +30.7	64.0	5 31.0 +31.5	64.1	5 57.2 +32.3	64.2	6 23.3 +33.1	64.3	6 49.3 +33.9	64.4	7 15.2 +34.7	64.5	7 41.0 +35.5	64.6	8 06.7 +36.2	64.7	25	5 04.7 +30.7	64.0	5 31.0 +31.5	64.1	5 57.2 +32.3	64.2	6 15.0 +34.7	64.3	25				
26	5 04.7 +30.7	64.0	5 31.0 +31.5	64.1	6 29.5 +32.2	64.3	7 29.4 +33.0	62.6	7 50.0 +33.7	62.7	8 24.5 +34.5	62.8	8 51.8 +35.0	62.9	9 30.0 +35.9	63.0	10 00.0 +36.9	63.1	11 06.7 +35.6	60.7	30	5 35.2 +29.6	63.1	5 12.1 +33.7	59.3	5 11.2 +34.7	59.7	11 42.3 +35.5	59.8	31
27	5 35.2 +29.6	63.1	5 12.1 +33.7	59.5	12 21.4 +31.7	54.7	12 21.4 +31.7	54.9	12 55.8 +32.5	55.1	13 30.1 +33.2	55.3	14 04.2 +33.9	55.5	14 38.1 +34.7	55.7	14 38.1 +34.7	55.7	36	6 06.7 +29.3	53.5	6 02.0 +31.7	53.7	6 27.5 +34.7	53.8	7 17.9 +33.6	53.9	36		
28	6 06.7 +29.3	53.5	11 42.3 +30.0	53.7	12 17.8 +30.8	53.8	12 53.1 +33.5	54.0	13 28.3 +32.2	54.2	14 03.3 +33.0	54.4	14 38.1 +33.8	54.6	15 12.8 +34.4	54.8	37	7 11.7 +29.3	52.5	7 01.2 +31.7	52.7	7 24.8 +32.6	53.0	18 03.0 +33.4	50.5	42				
29	7 11.7 +29.3	52.5	7 01.2 +31.7	52.7	7 17.2 +29.8	44.7	18 49.8 +30.6	44.7	18 41.7 +30.0	45.3	19 23.8 +30.7	45.6	20 05.7 +31.3	45.8	20 47.4 +32.0	46.1	20 47.4 +32.0	46.1	42	8 18.9 +28.8	44.7	8 10.0 +30.8	45.0	17 50.0 +32.8	45.2	17 24.8 +32.6	45.3	43		
30	8 18.9 +28.8	44.7	8 10.0 +30.8	45.0	17 29.8 +29.6	46.0	18 11.4 +30.3	46.2	18 52.8 +31.0	46.5	19 34.0 +31.7</																			

82°, 278° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	6 55.4 +30.1	94.0	6 51.1 +31.1	94.1	6 46.7 +32.0	94.3	6 42.2 +32.8	94.4	6 37.5 +33.8	94.5	6 32.8 +34.6	94.6	6 27.9 +35.4	94.7	6 22.9 +36.3	94.8	6 17.9 +37.2	94.9	6 12.9 +38.1	94.9	6 7.0 +39.0	94.8	0		
1	7 25.5 +30.1	93.1	7 22.2 +30.9	93.3	7 18.7 +31.8	93.4	7 15.0 +32.8	93.5	7 11.3 +33.6	93.7	7 07.4 +34.5	93.8	7 03.3 +35.4	93.9	6 59.2 +36.2	94.0	6 55.2 +37.1	94.0	6 51.2 +38.0	94.0	6 47.2 +38.9	94.0	6 43.2 +39.8	94.0	1
2	7 55.6 +30.0	92.3	7 53.1 +30.9	92.4	7 50.5 +31.8	92.6	7 47.8 +32.7	92.7	7 44.9 +33.6	92.8	7 41.9 +34.4	92.9	7 38.7 +35.3	93.1	7 35.4 +36.1	93.2	7 32.1 +37.0	93.2	7 28.9 +37.9	93.2	7 25.7 +38.8	93.2	7 22.5 +39.7	93.2	2
3	8 25.6 +29.8	91.4	8 24.0 +30.8	91.5	8 22.3 +31.7	91.7	8 20.5 +32.5	91.8	8 18.5 +33.4	92.0	8 16.3 +34.3	92.1	8 14.0 +35.2	92.3	8 11.5 +36.1	92.4	8 8.3 +37.0	92.4	8 5.0 +37.9	92.4	8 1.7 +38.8	92.4	8 -1.5 +39.7	92.4	3
4	8 55.4 +29.7	90.5	8 54.8 +30.6	90.7	8 54.0 +31.5	90.8	8 53.0 +32.5	91.0	8 51.9 +33.3	91.1	8 50.6 +34.2	91.3	8 49.2 +35.0	91.5	8 47.6 +35.9	91.6	8 45.0 +36.8	91.6	8 42.4 +37.7	91.6	8 39.8 +38.6	91.6	8 37.2 +39.5	91.6	4
5	9 25.1 +29.6	89.6	9 25.4 +30.5	89.8	9 25.5 +31.4	90.0	9 25.5 +32.3	90.1	9 25.2 +33.2	90.3	9 24.8 +34.1	90.5	9 24.2 +35.0	90.6	9 23.5 +35.8	90.8	9 22.9 +36.7	90.8	9 22.3 +37.6	90.8	9 21.7 +38.5	90.8	9 21.1 +39.4	90.8	5
6	9 54.7 +29.5	88.8	9 55.9 +30.4	88.9	9 56.9 +31.3	89.1	9 57.8 +32.2	89.3	9 58.4 +33.1	89.5	9 58.9 +34.0	89.6	9 59.2 +34.8	89.8	9 59.3 +35.7	90.0	9 58.7 +36.6	90.0	9 58.0 +37.5	90.0	9 57.3 +38.4	90.0	9 56.6 +39.3	90.0	6
7	10 24.2 +29.3	87.9	10 26.3 +30.2	88.1	10 28.2 +31.2	88.2	10 30.0 +32.0	88.4	10 31.5 +33.0	88.6	10 32.9 +33.8	88.8	10 34.0 +34.7	89.0	10 35.0 +35.6	89.2	10 36.0 +36.5	89.4	10 37.0 +37.4	89.4	10 37.5 +38.3	89.4	10 38.0 +39.2	89.4	7
8	10 53.5 +29.1	87.0	10 56.5 +30.1	87.2	10 59.4 +31.0	87.4	11 02.0 +31.9	87.6	11 04.5 +32.8	87.8	11 06.7 +33.7	88.0	11 08.7 +34.6	88.2	11 10.6 +35.4	88.4	11 12.5 +36.3	88.6	11 14.4 +37.2	88.6	11 16.3 +38.1	88.6	11 18.2 +39.0	88.6	8
9	11 22.6 +29.0	86.1	11 26.6 +29.9	86.3	11 30.4 +30.8	86.5	11 33.9 +31.8	86.7	11 37.3 +32.6	86.9	11 40.4 +33.5	87.1	11 43.3 +34.4	87.3	11 46.0 +35.3	87.5	11 48.7 +36.2	87.5	11 51.4 +37.1	87.5	11 54.1 +38.0	87.5	11 56.8 +38.9	87.5	9
10	11 51.6 +28.8	85.2	11 56.5 +29.8	85.4	12 01.2 +30.7	85.6	12 05.7 +31.5	85.8	12 09.9 +32.5	86.1	12 13.9 +33.4	86.3	12 17.7 +34.3	86.5	12 21.3 +35.1	86.7	12 24.9 +35.9	86.7	12 28.5 +36.8	86.7	12 32.1 +37.7	86.7	12 35.7 +38.6	86.7	10
11	12 20.4 +28.7	84.3	12 26.3 +29.5	84.5	12 31.9 +30.5	84.7	12 37.2 +31.5	85.0	12 42.4 +32.3	85.2	12 47.3 +33.2	85.4	12 52.0 +34.1	85.6	12 56.4 +35.0	85.9	12 60.8 +35.9	85.9	12 65.2 +36.8	85.9	12 69.6 +37.7	85.9	12 73.4 +38.6	85.9	11
12	12 49.1 +28.4	83.4	12 55.8 +29.4	83.6	13 02.4 +30.3	83.9	13 08.7 +31.2	84.1	13 14.7 +32.2	84.3	13 20.5 +33.1	84.6	13 26.1 +33.9	84.8	13 31.4 +34.8	85.0	13 36.7 +35.7	85.2	13 41.4 +36.6	85.4	13 46.1 +37.5	85.6	13 51.4 +38.4	85.6	12
13	13 17.5 +28.3	82.5	13 25.2 +29.2	82.7	13 32.7 +30.1	83.0	13 39.9 +31.1	83.2	13 46.9 +31.9	83.5	13 53.6 +32.8	83.7	14 00.0 +33.8	83.9	14 06.2 +34.7	84.2	14 12.4 +35.6	84.4	14 18.9 +36.5	84.6	14 25.3 +37.4	84.8	14 32.2 +38.3	84.8	13
14	13 45.8 +28.1	81.6	13 54.4 +29.0	81.8	14 02.8 +30.0	82.1	14 11.0 +30.8	82.3	14 18.8 +31.8	82.6	14 26.4 +32.7	82.8	14 33.8 +33.6	83.1	14 40.9 +34.4	83.4	14 48.0 +35.3	83.7	14 55.2 +36.2	83.7	15 02.4 +37.1	83.7	15 09.6 +38.0	83.7	14
15	14 13.9 +27.8	80.7	14 23.4 +28.8	80.9	14 32.8 +29.7	81.2	14 41.8 +30.7	81.4	14 50.6 +31.6	81.7	14 59.1 +32.5	82.0	15 07.4 +33.3	82.2	15 15.3 +34.2	82.5	15 23.2 +35.1	82.7	15 31.1 +36.0	82.9	15 39.0 +36.9	83.1	15 46.9 +37.8	83.1	15
16	14 41.7 +27.7	79.8	14 52.2 +28.6	80.0	15 02.5 +29.5	80.3	15 12.5 +30.4	80.6	15 22.2 +31.3	80.8	15 31.6 +32.3	81.1	15 40.7 +33.2	81.4	15 49.6 +34.1	81.7	15 58.5 +35.0	81.7	15 67.4 +35.9	81.7	15 76.3 +36.8	81.7	15 85.2 +37.7	81.7	16
17	15 09.4 +27.4	78.8	15 20.8 +28.4	79.1	15 32.0 +29.3	79.4	15 42.9 +30.2	79.7	15 53.5 +31.2	79.9	16 03.9 +32.0	80.2	16 13.9 +33.0	80.5	16 23.7 +33.8	80.8	16 33.5 +34.7	81.1	16 43.3 +35.6	81.4	16 53.1 +36.5	81.4	16 62.9 +37.4	81.4	17
18	15 36.8 +27.2	77.9	15 49.2 +28.1	78.2	16 01.3 +29.1	78.5	16 13.1 +30.0	78.8	16 24.7 +30.9	79.1	16 35.9 +31.9	79.3	16 46.9 +32.7	79.6	16 55.7 +33.6	79.9	17 05.5 +34.5	80.2	17 15.3 +35.4	80.5	17 25.1 +36.3	80.8	17 34.9 +37.2	80.8	18
19	16 04.0 +26.9	77.0	16 17.3 +27.9	77.3	16 30.4 +28.8	77.6	16 43.1 +29.8	77.9	16 55.6 +30.7	80.2	17 07.8 +31.6	80.5	17 19.6 +32.5	80.8	17 31.2 +33.4	81.1	17 43.0 +34.3	81.4	17 54.8 +35.2	81.4	18 06.6 +36.1	81.4	18 18.4 +37.0	81.4	19
20	16 30.9 +26.7	76.1	16 45.2 +27.7	76.4	16 59.2 +28.6	76.7	17 12.9 +29.5	77.0	17 26.3 +30.4	77.3	17 39.4 +31.3	77.6	17 52.1 +32.3	77.9	18 04.6 +33.1	78.2	18 17.9 +34.0	78.4	18 31.7 +34.9	78.6	18 45.5 +35.8	78.6	18 59.3 +36.7	78.6	20
21	16 57.6 +26.4	75.1	17 12.9 +27.3	75.4	17 27.8 +28.3	75.7	17 42.4 +29.3	76.0	17 56.7 +30.2	76.4	18 10.7 +31.1	76.7	18 24.4 +32.0	77.0	18 37.7 +33.0	77.3	18 51.3 +33.9	77.6	19 05.1 +34.8	77.6	19 19.0 +35.7	77.6	19 32.6 +36.6	77.6	21
22	17 24.0 +26.2	74.2	17 40.2 +27.2	74.5	17 56.1 +28.1	74.8	18 11.7 +29.0	75.1	18 26.9 +30.0	75.4	18 41.8 +30.9	75.8	18 56.4 +31.8	76.1	19 10.7 +32.6	76.4	19 23.3 +33.4	76.7	19 36.1 +34.3	76.7	19 49.0 +35.2	76.7	19 62.8 +36.1	76.7	22
23	17 50.2 +25.9	73.3	18 07.4 +26.8	73.6	18 24.2 +27.8	73.9	18 40.7 +28.7	74.2	18 56.9 +29.6	74.5	19 12.7 +30.6	74.9	19 28.2 +31.5	75.2	19 43.3 +30.3	75.5	19 57.9 +31.2	75.8	20 15.7 +32.2	76.1	20 30.4 +33.1	76.4	20 45.4 +34.0	76.4	20
24	18 16.1 +25.6	72.3	18 34.2 +26.6	72.6	18 52.0 +27.5	72.9	19 09.4 +28.5	73.3	19 26.5 +29.4	73.6	19 43.3 +30.3	74.0	19 59.7 +31.2	74.3	20 15.7 +32.2	74.7	20 32.5 +33.1	75.0	20 48.0 +33.9	75.3	20 63.4 +34.8	75.3	20 78.2 +35.7	75.3	21
25	18 41.7 +25.4	71.3	19 00.8 +26.3	71.7	19 19.5 +27.2	72.0	19 37.9 +28.1	72.3	19 55.9 +29.1	72.7	20 13.6 +30.0	73.0	20 30.9 +30.9	73.4	20 47.9 +31.8	73.7	20 64.8 +32.7	74.0	20 81.7 +33.6	74.3	20 98.5 +34.5	74.5	20 11.3 +35.4	74.5	20
26	19 07.1 +25.0	70.4	19 27.1 +25.9	70.7	19 46.7 +26.9	71.1	20 06.0 +27.9	71.4	20 25.0 +28.8	71.8	20 43.6 +29.7	72.1	21 01.8 +30.7	72.5	21 19.7 +31.6	72.8	21 38.6 +32.5	73.1	21 57.5 +33.4	73.4	22 17.4 +34.3	73.7	22 36.3 +35.2	73.7	22
27	19 32.1 +24.7	69.4	19 53.0 +25.7	69.8	20 13.6 +26.6	70.1	20 33.9 +27.5	70.5	20 53.8 +28.4	70.8	21 13.3 +29.4	71.2	21 32.5 +30.3	71.5	21 51.3 +31.2	71.9	21 70.2 +32.1	72.3	21 89.0 +33.0	72.6	21 97.8 +33.9	72.6	21 10.6 +34.8	72.6	27
28	19 56.8 +24.4	68.5	20 18.7 +25.4	68.8	20 40.2 +26.3	69.1	21 01.4 +27.2	69.5	21 22.2 +28.2	69.9	21 42.7 +29.1	70.2	22 02.8 +30.0	70.6	22 22.5 +31.0	71.0	22 42.8 +31.9	71.4	22 62.0 +32.8	71.8	22 81.8 +33.7	72.1	22 99.6 +34.6	72.4	22
29	20 21.2 +24.1	67.5	23 09.0 +22.9	69.1	23 37.1 +23.8	69.3	24 04.8 +24.7	69.7	24 32.1 +25.7	70.1	24 59.1 +26.6	70.5	25 25.7 +27.5	71.2	25 53.2 +28.4	71.8	25 81.8 +29.1	72.5	25 10.8 +29.9						

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 82°, 278°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.				
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z					
0	6 55.4 -30.3	94.0	6 51.1 -31.2	94.1	6 46.7 -32.1	94.3	6 42.2 -33.0	94.4	6 37.5 -33.8	94.5	6 32.8 -34.7	94.6	6 27.9 -35.5	94.7	6 22.9 -36.4	94.8	6 17.9 -37.3	94.9	6 12.9 -38.2	94.9	6 7.9 -39.1	94.8	6 2.9 -39.9	94.8	0				
1	6 25.1 -30.4	94.9	6 19.9 -31.2	95.0	6 14.6 -32.1	95.1	6 09.2 -33.0	95.2	6 03.7 -33.9	95.3	5 58.1 -34.8	95.4	5 52.4 -35.6	95.5	5 46.5 -36.4	95.6	5 40.6 -37.2	95.6	5 34.7 -38.0	95.6	5 28.8 -38.8	95.6	5 22.9 -39.6	95.6	1				
2	5 54.7 -30.4	95.8	5 48.7 -31.4	95.9	5 42.5 -32.2	96.0	5 36.2 -33.1	96.1	5 29.8 -33.9	96.2	5 23.3 -34.8	96.2	5 16.8 -35.7	96.3	5 10.1 -36.5	96.4	5 4.1 -37.4	96.4	5 -1.7 -38.2	96.4	5 -7.7 -39.1	96.4	5 -12.7 -39.9	96.4	2				
3	5 24.3 -30.5	96.6	5 17.3 -31.4	96.7	5 10.3 -32.3	96.8	5 0.3 -33.2	96.9	4 55.9 -34.1	97.0	4 48.5 -34.9	97.1	4 41.1 -35.7	97.1	4 33.6 -36.6	97.2	4 26.2 -37.5	97.2	4 19.2 -38.3	97.2	4 12.2 -39.2	97.2	4 5.2 -39.9	97.2	3				
4	4 53.8 -30.6	97.5	4 45.9 -31.4	97.6	4 38.0 -32.4	97.7	4 29.9 -33.2	97.7	4 21.8 -34.0	97.8	4 13.6 -34.9	97.9	4 05.4 -35.8	98.0	3 57.0 -36.6	98.0	3 50.7 -37.4	98.0	3 44.4 -38.2	98.0	3 38.1 -39.0	98.0	3 31.8 -39.8	98.0	4				
5	4 23.2 -30.6	98.4	4 14.5 -31.6	98.4	4 05.6 -32.4	98.5	3 56.7 -33.2	98.6	3 47.8 -34.2	98.6	3 38.7 -35.0	98.7	3 29.6 -35.8	98.8	3 20.4 -36.6	98.8	3 11.2 -37.4	98.8	3 0.9 -38.2	98.8	3 -10.1 -39.0	98.8	3 -20.4 -39.8	98.8	5				
6	3 52.6 -30.7	99.2	3 42.9 -31.5	99.3	3 33.2 -32.4	99.3	3 23.5 -33.3	99.4	3 13.6 -34.1	99.5	3 0.3 -35.0	99.5	2 53.8 -35.8	99.6	2 43.8 -36.7	99.6	2 33.8 -37.5	99.6	2 23.8 -38.3	99.6	2 13.8 -39.1	99.6	2 3.8 -39.9	99.6	6				
7	3 21.9 -30.7	100.1	3 11.4 -31.6	100.1	3 00.8 -32.5	100.2	2 50.2 -33.4	100.2	2 39.5 -34.2	100.3	2 28.7 -35.0	100.3	2 18.0 -35.9	100.4	2 07.1 -36.6	100.4	2 0.1 -37.4	100.4	2 -10.1 -38.2	100.4	2 -20.1 -39.0	100.4	2 -30.1 -39.8	100.4	7				
8	2 51.2 -30.8	100.9	2 39.8 -31.7	101.0	2 28.3 -32.5	101.0	2 16.8 -33.4	101.1	2 05.3 -34.1	101.1	1 53.7 -35.1	101.1	1 42.1 -35.9	101.2	1 30.5 -36.7	101.2	1 10.2 -37.5	101.2	1 -10.2 -38.3	101.2	1 -20.2 -39.1	101.2	1 -30.2 -39.9	101.2	8				
9	2 20.4 -30.8	101.8	2 08.1 -31.7	101.8	1 55.8 -32.6	101.9	1 43.4 -33.4	101.9	1 31.0 -34.2	101.9	1 18.6 -35.0	101.9	1 06.2 -35.9	102.0	0 53.8 -36.8	102.0	0 17.1 -37.6	102.0	0 0.1 -38.4	102.0	0 -10.1 -39.2	102.0	0 -20.1 -39.9	102.0	9				
10	1 49.6 -30.8	102.7	1 36.4 -31.7	102.7	1 23.2 -32.5	102.7	1 10.0 -33.4	102.7	0 56.8 -34.2	102.7	0 43.6 -35.1	102.8	0 30.3 -35.9	102.8	0 17.0 -36.7	102.8	0 0.3 -37.5	102.8	0 -10.3 -38.2	102.8	0 -20.3 -39.0	102.8	0 -30.3 -39.8	102.8	10				
11	1 18.8 -30.9	103.5	1 04.7 -31.7	103.5	0 50.7 -32.6	103.5	0 36.6 -33.4	103.6	0 22.6 -34.3	103.6	0 0.8 -35.1	103.6	0 05.6 -35.9	103.6	0 19.7 -36.7	103.6	0 0.1 -37.5	103.6	0 -10.1 -38.2	103.6	0 -20.1 -39.0	103.6	0 -30.1 -39.8	103.6	11				
12	0 47.9 -30.8	104.4	0 33.0 -31.7	104.4	0 18.1 -32.6	104.4	0 0.3 -33.4	104.4	0 11.7 +34.3	75.6	0 26.6 +35.1	75.6	0 41.5 +35.9	75.6	0 56.4 +36.7	75.6	0 17.4 +35.9	74.8	0 33.1 +36.7	74.8	0 23.1 +37.5	74.8	0 3.1 +38.3	74.8	13				
13	0 17.1 -30.9	105.2	0 0.1 -31.7	105.2	0 14.5 +32.5	74.8	0 30.2 +33.4	74.8	0 46.0 +34.2	74.8	1 01.7 +35.1	74.8	1 36.8 +35.0	74.0	1 53.3 +35.9	74.0	2 09.8 +36.7	74.1	2 46.5 +36.6	73.3	2 40.8 +37.4	73.3	2 34.1 +38.2	73.3	14				
14	0 13.8 +30.9	73.9	0 30.4 +31.7	73.9	0 47.0 +32.6	73.9	1 03.6 +33.4	73.9	1 20.2 +34.2	74.0	1 36.8 +35.0	74.0	2 29.2 +35.8	73.2	2 46.5 +36.6	73.3	2 40.8 +37.4	73.3	2 34.1 +38.2	73.3	2 28.4 +39.0	73.3	2 22.1 +39.8	73.3	15				
15	0 44.7 +30.8	73.1	1 02.1 +31.7	73.1	1 19.6 +32.5	73.1	1 37.0 +33.4	73.1	1 54.4 +34.2	73.1	2 11.8 +35.0	73.1	2 29.2 +35.8	73.2	2 46.5 +36.6	73.3	2 40.8 +37.4	73.3	2 34.1 +38.2	73.3	2 28.4 +39.0	73.3	2 22.1 +39.8	73.3	16				
16	1 15.5 +30.8	72.2	1 33.8 +31.7	72.2	1 52.1 +32.6	72.3	2 10.4 +33.4	72.3	2 28.6 +34.2	72.3	2 46.8 +35.0	72.4	3 05.0 +35.8	72.4	3 23.1 +36.6	72.5	3 17.1 +37.4	72.5	3 32.1 +38.2	72.5	3 26.2 +39.0	72.5	3 20.1 +39.8	72.5	17				
17	1 46.3 +30.8	71.3	2 05.5 +31.7	71.4	2 24.7 +32.4	71.4	2 43.8 +33.3	71.5	3 02.8 +34.2	71.5	3 21.8 +35.0	71.6	3 40.8 +35.7	71.6	3 35.9 +36.5	71.7	3 28.1 +37.3	71.7	3 22.2 +38.1	71.7	3 16.3 +38.9	71.7	3 10.4 +39.7	71.7	18				
18	2 17.1 +30.8	70.5	2 37.2 +31.6	70.5	2 57.1 +32.5	70.6	3 17.1 +33.2	70.6	3 37.0 +34.0	70.7	3 56.8 +34.9	70.7	4 16.5 +35.7	70.8	4 36.2 +36.5	70.9	4 30.5 +37.3	70.9	4 24.2 +38.1	70.9	4 18.1 +38.9	70.9	4 12.2 +39.7	70.9	19				
19	2 47.9 +30.7	69.6	3 08.8 +31.5	69.7	3 29.6 +32.4	69.7	3 50.3 +33.0	69.8	4 11.0 +34.1	69.9	4 31.7 +34.8	69.9	4 52.2 +35.7	70.0	5 12.7 +36.4	70.1	5 24.1 +37.2	70.1	5 17.8 +38.0	70.1	5 11.5 +38.8	70.1	5 5.2 +39.6	70.1	19				
20	3 18.6 +30.7	68.8	3 40.3 +31.6	68.8	4 02.0 +32.3	68.9	4 23.6 +33.1	69.0	4 45.1 +34.0	69.0	5 06.5 +34.8	69.1	5 27.9 +35.6	69.2	5 49.1 +36.4	69.3	5 33.6 +37.2	69.3	5 27.1 +38.0	69.3	5 19.1 +38.8	69.3	5 12.1 +39.6	69.3	20				
21	3 49.3 +30.7	67.9	4 11.9 +31.4	68.0	4 34.3 +32.3	68.0	4 56.7 +33.2	68.1	5 19.1 +33.9	68.2	5 41.3 +34.7	68.3	6 03.5 +35.5	68.4	6 25.5 +36.3	68.5	6 18.0 +37.1	68.5	6 11.0 +37.9	68.5	6 4.0 +38.7	68.5	6 0.0 +39.5	68.5	21				
22	4 20.0 +30.6	67.0	4 43.3 +31.5	67.1	5 06.6 +32.3	67.2	5 29.9 +33.0	67.3	5 53.0 +33.8	67.4	6 16.0 +34.7	67.5	6 39.0 +35.4	67.6	7 01.8 +36.2	67.7	7 32.1 +37.0	67.7	7 25.2 +37.8	67.7	7 18.3 +38.6	67.7	7 11.4 +39.4	67.7	22				
23	4 50.6 +30.5	66.2	5 14.8 +31.3	66.3	5 38.9 +32.1	66.3	6 02.9 +33.0	66.4	6 26.8 +33.8	66.5	6 50.7 +34.5	66.6	7 14.4 +35.3	66.8	7 38.0 +36.1	66.9	8 14.1 +36.0	66.9	8 0.8 +36.8	66.9	8 -10.1 +37.6	66.9	8 -20.1 +38.4	66.9	23				
24	5 21.1 +30.4	65.3	5 46.1 +31.3	65.4	6 11.0 +32.1	65.5	6 35.9 +32.8	65.6	7 00.6 +33.7	65.7	7 25.2 +34.5	65.8	7 49.7 +35.3	65.9	8 14.1 +36.0	66.0	8 0.7 +36.8	66.0	8 -10.1 +37.6	66.0	8 -20.1 +38.4	66.0	8 -30.1 +39.2	66.0	24				
25	5 51.5 +30.4	64.4	6 17.4 +31.1	64.5	6 43.1 +32.0	64.6	7 08.7 +32.8	64.8	7 34.3 +33.5	64.9	7 59.7 +34.3	65.0	8 25.0 +35.1	65.1	8 50.1 +36.0	65.2	8 15.9 +35.8	65.2	8 0.1 +35.6	65.2	8 -10.1 +36.4	65.2	8 -20.1 +37.2	65.2	8 -30.1 +38.0	65.2	25		
26	6 21.9 +30.3	63.6	6 48.5 +31.1	63.7	7 15.1 +31.9	63.8	7 41.5 +32.7	63.9	8 07.8 +33.5	64.0	8 34.0 +34.3	64.2	9 00.1 +35.1	64.3	9 26.1 +35.8	64.5	9 12.1 +35.6	64.6	9 0.1 +35.4	64.6	9 -10.1 +36.2	64.6	9 -20.1 +37.0	64.6	9 -30.1 +37.8	64.6	26		
27	6 52.2 +30.1	62.7	7 19.6 +31.0	62.8	7 47.0 +31.7	62.9	8 14.2 +32.6	63.1	8 41.3 +33.4	63.2	9 08.3 +34.1	63.3	9 35.2 +34.9	63.5	10 0.1 +34.0	63.6	10 23.8 +35.2	63.7	10 11.2 +35.0	63.8	10 0.1 +34.8	63.8	10 -10.1 +35.6	63.8	10 -20.1 +36.4	63.8	10 -30.1 +37.2	63.8	27
28	7 22.3 +30.1	61.8	7 50.6 +30.9	62.0	8 18.7 +31.7	62.1	8 46.8 +32.4	62.2	9 14.7 +33.2	62.4	9 42.4 +34.1	62.5	10 0.1 +34.8	62.6	10 26.8 +35.6	62.7	10 12.2 +36.4	62.8	10 0.1 +37.2	62.8	10 -10.1 +37.0	62.8	10 -20.1 +37.8	62.8	10 -30.1 +38.6	62.8	28		
29	7 52.4 +30.0	61.0	8 15.0 +30.1	61.1	8 24.6 +30.8	61.2	9 17.6 +31.4	61.3	10 22.1 +32.4	61.4	10 50.4 +33.1	61.5	12 29.8 +34.9	61.6	14 10.6 +33.0	61.7	16 20.2 +34.8	61.8	18 40.1 +35.6	61.9	20 42.1 +36.2	62.0	22 22.0 +37.0	62.1	24 5.1 +37.4	62.1	40		

83°, 277° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.									
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z										
0	6 03.5 +30.1	93.5	5 59.8 +31.0	93.6	5 55.9 +32.0	93.7	5 52.0 +32.8	93.8	5 47.9 +33.7	93.9	5 43.8 +34.5	94.0	5 39.5 +35.4	94.1	5 35.1 +36.3	94.2	5 31.1 +37.2	94.3	5 26.8 +38.1	94.4	5 22.6 +39.0	94.5	5 18.4 +39.9	94.6	5 14.2 +40.8	94.7	5 10.0 +41.7	94.8						
1	6 33.6 +30.1	92.6	6 30.8 +30.9	92.8	6 27.9 +31.8	92.9	6 24.8 +32.7	93.0	6 21.6 +33.6	93.1	6 18.3 +34.5	93.2	6 14.9 +35.3	93.3	6 11.4 +36.1	93.4	6 7.9 +37.0	93.5	6 4.5 +37.9	93.6	6 1.1 +38.8	93.7	5 57.7 +39.6	93.8	5 53.1 +40.5	93.9	5 48.7 +41.4	94.0	5 44.2 +42.3	94.1				
2	7 03.7 +29.9	91.8	7 01.7 +30.9	91.9	6 59.7 +31.7	92.0	6 57.5 +32.7	92.1	6 55.2 +33.5	92.3	6 52.8 +34.4	92.4	6 50.2 +35.3	92.5	6 47.5 +36.1	92.6	6 44.2 +37.0	92.7	6 40.9 +37.9	92.8	6 37.6 +38.8	92.9	6 34.3 +39.7	93.0	6 31.0 +40.6	93.1	5 57.7 +41.5	93.2	5 53.1 +42.4	93.3				
3	7 33.6 +29.8	90.9	7 32.6 +30.7	91.0	7 31.4 +31.7	91.2	7 30.2 +32.5	91.3	7 28.7 +33.5	91.4	7 27.2 +34.3	91.6	7 25.5 +35.1	91.7	7 23.6 +36.1	91.8	7 21.9 +37.0	91.9	7 19.2 +37.9	92.0	7 16.5 +38.8	92.1	7 13.8 +39.7	92.2	7 11.1 +40.6	92.3	7 8.4 +41.5	92.4	7 5.7 +42.4	92.5				
4	8 03.4 +29.8	90.0	8 03.3 +30.7	90.2	8 03.1 +31.5	90.3	8 02.7 +32.4	90.4	8 02.2 +33.3	90.6	8 01.5 +34.2	90.7	8 00.6 +35.1	90.9	8 00.0 +36.0	91.0	8 00.0 +36.9	91.1	8 00.0 +37.8	91.2	8 00.0 +38.7	91.3	8 00.0 +39.6	91.4	8 00.0 +40.5	91.5	8 00.0 +41.4	91.6	8 00.0 +42.3	91.7				
5	8 33.2 +29.6	89.1	8 34.0 +30.5	89.3	8 34.6 +31.5	89.4	8 35.1 +32.4	89.6	8 35.5 +33.2	89.7	8 35.7 +34.1	89.9	8 35.7 +35.0	90.0	8 35.6 +35.8	90.2	8 35.6 +36.7	90.4	8 35.6 +37.5	90.6	8 35.6 +38.3	90.8	8 35.6 +39.1	91.0	8 35.6 +39.9	91.2	8 35.6 +40.7	91.4	8 35.6 +41.5	91.6	8 35.6 +42.3	91.8		
6	9 02.8 +29.4	88.3	9 04.5 +30.4	88.4	9 06.1 +31.3	88.6	9 07.5 +32.2	88.7	9 08.7 +33.1	88.9	9 09.8 +33.9	89.1	9 10.7 +34.8	89.2	9 11.4 +35.7	89.4	9 12.3 +36.6	89.6	9 13.2 +37.5	89.8	9 14.1 +38.4	90.0	9 15.0 +39.3	90.2	9 15.9 +40.2	90.4	9 16.8 +41.1	90.6	9 17.7 +42.0	90.8	9 18.6 +42.8	91.0	9 19.5 +43.6	91.2
7	9 32.2 +29.4	87.4	9 34.9 +30.3	87.5	9 37.4 +31.1	87.7	9 39.7 +32.0	87.9	9 41.8 +33.0	88.1	9 43.7 +33.9	88.2	9 45.5 +34.7	88.4	9 47.1 +35.6	88.6	9 48.7 +36.5	88.8	9 50.3 +37.4	89.0	9 52.0 +38.3	89.2	9 53.7 +39.2	89.4	9 55.4 +40.1	89.6	9 57.1 +41.0	89.8	9 58.8 +41.8	90.0	9 59.7 +42.6	90.2		
8	10 01.6 +29.2	86.5	10 05.2 +30.1	86.7	10 08.5 +31.1	86.9	10 11.7 +32.0	87.0	10 14.8 +32.8	87.2	10 17.6 +33.7	87.4	10 20.2 +34.6	87.6	10 22.7 +35.4	87.8	10 25.3 +36.3	88.0	10 27.8 +37.1	88.2	10 30.3 +37.9	88.4	10 32.8 +38.7	88.6	10 35.3 +39.5	88.8	10 37.8 +40.3	89.0	10 40.3 +41.1	89.2	10 42.8 +41.9	89.4		
9	10 30.8 +29.0	85.6	10 35.3 +30.0	85.8	10 39.6 +30.9	86.0	10 43.7 +31.8	86.2	10 47.6 +32.7	86.4	10 51.3 +33.6	86.5	10 54.8 +34.5	86.7	10 58.1 +35.4	86.9	10 58.1 +36.2	87.1	10 58.1 +37.0	87.3	10 58.1 +37.8	87.5	10 58.1 +38.6	87.7	10 58.1 +39.4	87.9	10 58.1 +40.2	88.1	10 58.1 +41.0	88.3				
10	10 59.8 +28.9	84.7	11 05.3 +29.8	84.9	11 10.5 +30.7	85.1	11 15.5 +31.6	85.3	11 20.3 +32.6	85.5	11 24.9 +33.4	85.7	11 29.3 +34.3	85.9	11 33.5 +35.2	86.1	11 37.7 +36.1	86.3	11 41.9 +37.0	86.5	11 46.1 +37.9	86.7	11 50.3 +38.7	86.9	11 54.5 +39.5	87.1	11 58.7 +40.3	87.3	11 62.9 +41.1	87.5	11 67.1 +41.9	87.7		
11	11 28.7 +28.8	83.8	11 35.1 +29.6	84.0	11 41.2 +30.6	84.2	11 47.1 +31.5	84.4	11 52.9 +32.3	84.6	11 58.3 +33.1	84.9	12 03.6 +34.2	85.1	12 08.7 +35.0	85.3	12 14.2 +35.9	85.5	12 20.7 +36.7	85.7	12 27.2 +37.5	85.9	12 33.7 +38.3	86.1	12 39.2 +39.1	86.3	12 44.7 +39.9	86.5	12 49.2 +40.7	86.7	12 53.7 +41.5	86.9		
12	11 57.5 +28.5	82.9	12 04.7 +29.5	83.1	12 11.8 +30.4	83.4	12 18.6 +31.4	83.6	12 25.2 +32.3	83.8	12 31.6 +33.2	84.0	12 37.8 +34.0	84.2	12 43.7 +34.9	84.5	12 49.5 +35.8	84.7	12 55.3 +36.7	84.9	12 61.1 +37.5	85.1	12 66.9 +38.3	85.3	12 72.7 +39.1	85.5	12 78.5 +39.9	85.7	12 84.3 +40.7	85.9	12 89.1 +41.5	86.1		
13	12 26.0 +28.4	82.0	12 34.2 +29.4	82.2	12 42.2 +30.3	82.5	12 50.0 +31.1	82.7	12 57.5 +32.0	82.9	13 04.8 +32.9	83.2	13 11.8 +33.8	83.4	13 18.6 +34.7	83.6	13 25.4 +35.6	83.8	13 32.2 +36.5	84.0	13 38.9 +37.4	84.2	13 45.6 +38.3	84.4	13 53.3 +39.2	84.6	13 60.1 +40.1	84.8	13 66.9 +40.9	85.0	13 73.7 +41.7	85.2		
14	12 54.4 +28.2	81.1	13 03.6 +29.1	81.4	13 12.5 +30.0	81.6	13 21.1 +31.0	81.8	13 29.5 +31.9	82.1	13 37.7 +32.8	82.3	13 45.6 +33.7	82.5	13 53.3 +34.5	82.7	13 61.2 +35.4	82.9	13 69.1 +36.3	83.1	13 76.9 +37.2	83.3	13 84.8 +38.1	83.5	13 92.7 +39.0	83.7	13 99.6 +39.9	83.9	14 06.5 +40.7	84.1				
15	13 22.6 +28.0	80.2	13 32.7 +28.9	80.5	13 42.5 +29.9	80.7	13 52.1 +30.8	80.9	14 01.4 +31.7	81.2	14 10.5 +32.6	81.4	14 19.3 +33.5	81.6	14 28.1 +34.4	81.8	14 36.9 +35.3	82.0	14 45.7 +36.2	82.2	14 54.5 +37.1	82.4	15 03.3 +38.0	82.6	15 12.1 +38.9	82.8	15 20.9 +39.7	83.0	15 29.7 +40.5	83.2	15 38.5 +41.3	83.4	15 47.3 +42.1	83.6
16	13 50.6 +27.8	79.3	14 01.6 +28.8	79.6	14 12.4 +29.6	79.8	14 22.9 +30.6	80.1	14 31.3 +31.5	80.3	14 41.3 +32.4	80.6	14 52.8 +33.3	80.8	15 02.2 +34.2	81.1	15 10.2 +35.1	81.6	15 18.2 +36.0	81.9	15 26.2 +36.9	82.2	15 34.2 +37.8	82.5	15 42.2 +38.7	82.8	15 50.2 +39.6	83.1	15 58.2 +40.5	83.4	15 66.2 +41.3	83.7		
17	14 18.4 +27.6	78.4	14 30.4 +28.5	78.6	14 42.0 +29.5	78.9	14 53.5 +30.3	79.2	15 04.6 +31.3	79.4	15 15.5 +32.2	79.7	15 26.1 +33.1	80.0	15 36.4 +34.0	80.2	15 45.3 +34.9	80.5	15 54.2 +35.8	80.8	15 63.1 +36.7	81.0	15 72.0 +37.5	81.3	15 80.9 +38.3	81.6	15 89.8 +39.1	81.9	15 98.7 +39.9	82.2	16 07.6 +40.7	82.5		
18	14 46.0 +27.4	77.5	14 58.9 +28.3	77.7	15 11.5 +29.2	78.0	15 23.8 +30.2	78.3	15 35.9 +31.1	78.5	15 47.7 +32.0	78.8	15 59.2 +32.8	79.1	16 10.4 +33.7	79.4	16 18.0 +34.6	79.7	16 25.8 +35.4	80.0	16 33.6 +36.2	80.3	16 41.4 +37.0	80.6	16 49.2 +37.8	80.9	16 57.0 +38.6	81.2	16 64.8 +39.4	81.5	16 72.6 +39.7	81.8	16 80.4 +40.5	82.1
19	15 13.4 +27.1	76.6	15 27.2 +28.1	76.8	15 40.7 +29.0	77.1	16 0.0 +30.8	77.7	16 19.7 +30.3	78.4	16 38.0 +31.2	79.1	16 56.1 +31.9	79.8	17 19.7 +32.7	80.5	17 38.0 +33.4	81.2	17 56.9 +34.2	81.9	18 17.6 +35.0	82.6	18 35.4 +35.8	83.3	18 53.2 +36.6	84.0	19 12.3 +37.4	84.7	19 30.9 +38.2	85.4	19 48.6 +39.0	86.1	19 56.4 +39.8	86.8
20	15 59.8 +27.0	75.7	16 23.1 +27.6	75.9	16 38.5 +28.6	76.3	17 0.0 +30.4	77.0	17 19.2 +30.9	77.8	17 38.0 +31.7	78.6	17 56.9 +32.5	79.4	18 17.3 +33.3	79.7	18 35.4 +34.0	80.0	18 53.9 +34.8	80.7	19 12.1 +35.6	81.4	19 30.9 +36.4	82.1	19 49.6 +37.1	82.8	19 58.4 +38.0	83.5	19 67.2 +38.8	84.2	19 76.0 +39.5	85.1		
21	16 54.9 +26.6	74.7	17 07.1 +27.4	74.4	17 23.1 +29.2	74.6	17 38.8 +30.2	75.0	17 54.2 +31.1	75.3	18 09.4 +31.9	75.6	18 23.0 +32.7	76.5	18 37.2 +33.4	77.1	18 52.0 +34.1	77.8	19 07.8 +34.9	78.5	19 22.6 +35.6	79.2	19 37.4 +36.3	79.9	19 52.2 +37.1	80.6	19 59.0 +37.9	81.3	19 65.8 +38.7	82.0	19 72.6 +39.5	82.7		
22	17 52.6 +25.6	70.9	18 12.0 +26.6	71.2	18 31.1 +27.5	71.6	18 50.0 +28.4	71.9	19 08.5 +29.3	72.2	19 26.6 +30.3	72.5	19 44.4 +31.2	72.9	20 01.9 +32.1	73.2	20 19.1 +32.9	73.5	20 36.8 +33.7	73.8	20 54.5 +34.5	74.1	21 01.9 +35.4	74.4	21 19.7 +36.3	74.7	21 37.3 +37.1	75.0	21 55.0 +37.9	75.3	21 72.7 +38.7	75.6		
23	17 52.6 +25.4	70.8	18 23.7 +25.3	71.1	18 40.1 +27.3	71.5	18 57.0 +28.2	71.8	1																									

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 83° , 277°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	6 03.5 -30.2	93.5	5 59.8 -31.1	93.6	5 55.9 -32.0	93.7	5 52.0 -32.9	93.8	5 47.9 -33.7	93.9	5 43.8 -34.7	94.0	5 39.5 -35.5	94.1	5 35.1 -36.3	94.2	5 31.1 -36.6	94.2	5 27.1 -36.4	95.0	5 23.8 -36.4	95.0	5 19.8 -36.4	95.0	0
1	5 33.3 -30.3	94.4	5 28.7 -31.2	94.5	5 23.9 -32.0	94.6	5 19.1 -33.0	94.7	5 14.2 -33.9	94.8	5 09.1 -34.6	94.8	5 04.0 -35.5	94.9	4 58.8 -36.4	95.0	4 54.0 -36.4	95.0	4 49.8 -36.4	95.0	4 45.8 -36.4	95.0	4 41.8 -36.4	95.0	1
2	5 03.0 -30.3	95.2	4 57.5 -31.3	95.3	4 51.9 -32.2	95.4	4 46.1 -33.0	95.5	4 40.3 -33.8	95.6	4 34.5 -34.8	95.7	4 28.5 -35.6	95.7	4 22.4 -36.4	95.8	4 18.4 -36.4	95.8	4 14.3 -36.4	95.8	4 10.3 -36.4	95.8	4 6.3 -36.4	95.8	2
3	4 32.7 -30.5	96.1	4 26.2 -31.3	96.2	4 19.7 -32.2	96.3	4 13.1 -33.0	96.3	4 06.5 -34.0	96.4	3 59.7 -34.8	96.5	3 52.9 -35.6	96.6	3 46.0 -36.4	96.6	3 39.6 -36.5	96.6	3 33.6 -36.5	96.6	3 27.6 -36.5	96.6	3 21.6 -36.5	96.6	3
4	4 02.2 -30.4	97.0	3 54.9 -31.3	97.0	3 47.5 -32.2	97.1	3 40.1 -33.2	97.2	3 32.5 -34.0	97.2	3 24.9 -34.8	97.3	3 17.3 -35.7	97.4	3 09.6 -36.5	97.4	3 03.6 -36.5	97.4	3 0 -36.5	97.4	3 09.6 -36.5	97.4	3 0 -36.5	97.4	4
5	3 31.8 -30.5	97.8	3 23.6 -31.5	97.9	3 15.3 -32.3	98.0	3 06.9 -33.1	98.0	2 58.5 -34.0	98.1	2 50.1 -34.9	98.1	2 41.6 -35.7	98.2	2 33.1 -36.6	98.2	2 25.1 -36.6	98.2	2 17.1 -36.6	98.2	2 9.1 -36.6	98.2	2 0.1 -36.6	98.2	5
6	3 01.3 -30.6	98.7	2 52.1 -31.4	98.8	2 43.0 -32.3	98.8	2 33.8 -33.2	98.8	2 24.5 -34.0	98.9	2 15.2 -34.9	98.9	2 05.9 -35.7	99.0	1 56.5 -36.5	99.0	1 20.0 -36.6	99.0	1 0.0 -36.6	99.0	1 20.0 -36.6	99.0	1 0.0 -36.6	99.0	6
7	2 30.7 -30.6	99.6	2 20.7 -31.5	99.6	2 10.7 -32.4	99.6	2 00.6 -33.2	99.7	1 50.5 -34.1	99.7	1 40.3 -34.9	99.7	1 30.2 -35.8	99.8	1 20.0 -36.6	99.8	1 0.0 -36.6	99.8	1 20.0 -36.6	99.8	1 0.0 -36.6	99.8	7		
8	2 00.1 -30.6	100.4	1 49.2 -31.5	100.5	1 38.3 -32.4	100.5	1 27.4 -33.3	100.5	1 16.4 -34.1	100.5	1 05.4 -34.9	100.6	0 54.4 -35.7	100.6	0 43.4 -36.6	100.6	0 23.4 -36.6	100.6	0 0.4 -36.6	100.6	0 23.4 -36.6	100.6	0 0.4 -36.6	100.6	8
9	1 29.5 -30.7	101.3	1 17.7 -31.5	101.3	1 05.9 -32.3	101.3	0 54.1 -33.2	101.3	0 42.3 -34.1	101.4	0 10.3 -34.9	101.4	0 0.3 -34.9	101.4	0 18.7 -35.8	101.4	0 0.6 -36.5	101.4	0 0.6 -36.5	101.4	0 0.6 -36.5	101.4	0 0.6 -36.5	101.4	9
10	0 58.8 -30.6	102.1	0 46.2 -31.5	102.2	0 33.6 -32.4	102.2	0 20.9 -33.2	102.2	0 0.8 -34.1	102.2	0 0.4 +35.0	77.8	0 17.1 +35.7	77.8	0 29.7 +36.6	77.8	0 10.3 +36.6	77.8	0 0.3 +36.6	77.8	0 10.3 +36.6	77.8	0 0.3 +36.6	77.8	10
11	0 28.2 -30.7	103.0	0 14.7 -31.6	103.0	0 0.1 -32.4	103.0	0 12.3 -33.3	77.0	0 25.9 +34.0	77.0	0 39.4 +34.9	77.0	0 52.8 +35.8	77.0	1 06.3 +36.6	77.0	1 06.3 +36.6	77.0	1 06.3 +36.6	77.0	1 06.3 +36.6	77.0	1 06.3 +36.6	77.0	11
12	0 02.5 +30.6	76.1	0 16.9 +31.5	76.1	0 31.2 +32.4	76.1	0 45.6 +33.2	76.2	0 59.9 +34.1	76.2	1 14.3 +34.9	76.2	1 28.6 +35.7	76.2	1 42.9 +36.5	76.2	1 57.9 +36.5	76.2	1 57.9 +36.5	76.2	1 57.9 +36.5	76.2	1 57.9 +36.5	76.2	12
13	0 33.1 +30.7	75.3	0 48.4 +31.5	75.3	1 03.6 +32.4	75.3	1 18.8 +33.2	75.3	1 34.0 +34.1	75.3	1 49.2 +34.9	75.3	2 04.3 +35.7	75.4	2 19.4 +36.5	75.4	2 55.9 +36.5	75.4	2 55.9 +36.5	75.4	2 55.9 +36.5	75.4	2 55.9 +36.5	75.4	13
14	1 03.8 +30.6	74.4	1 19.9 +31.5	74.4	1 36.0 +32.3	74.5	1 52.0 +33.2	74.5	2 08.1 +34.0	74.5	2 24.1 +34.8	74.6	2 40.0 +35.7	74.6	2 55.9 +36.5	74.6	2 55.9 +36.5	74.6	2 55.9 +36.5	74.6	2 55.9 +36.5	74.6	2 55.9 +36.5	74.6	14
15	1 34.4 +30.6	73.6	1 51.4 +31.5	73.6	2 08.3 +32.4	73.6	2 25.2 +33.2	73.7	2 42.1 +34.0	73.7	2 58.9 +34.8	73.8	3 15.7 +35.6	73.8	3 32.4 +36.4	73.9	3 49.1 +36.4	73.9	3 55.9 +36.4	73.9	3 55.9 +36.4	73.9	3 55.9 +36.4	73.9	15
16	2 05.0 +30.6	72.7	2 22.9 +31.4	72.7	2 40.7 +32.3	72.8	2 58.4 +33.1	72.8	3 16.1 +34.0	72.9	3 33.7 +34.8	72.9	3 51.3 +35.6	73.0	4 08.8 +36.4	73.1	4 21.6 +36.2	73.1	5 21.6 +36.2	73.1	5 21.6 +36.2	73.1	5 21.6 +36.2	73.1	16
17	2 35.6 +30.6	71.8	2 54.3 +31.4	71.9	3 13.0 +32.2	71.9	3 31.5 +33.1	72.0	3 50.1 +33.9	72.0	4 08.5 +34.8	72.1	4 26.9 +35.6	72.2	4 45.2 +36.4	72.3	4 52.5 +36.4	72.3	4 52.5 +36.4	72.3	4 52.5 +36.4	72.3	4 52.5 +36.4	72.3	17
18	3 06.2 +30.5	71.0	3 25.7 +31.4	71.0	3 45.2 +32.2	71.1	4 04.6 +33.1	71.1	4 24.0 +33.8	71.2	4 43.3 +34.6	71.3	5 02.5 +35.4	71.4	6 21.6 +36.2	71.5	7 57.8 +36.2	70.7	8 57.8 +36.2	70.7	8 57.8 +36.2	70.7	8 57.8 +36.2	70.7	19
19	3 36.7 +30.5	70.1	3 57.1 +31.3	70.2	4 17.4 +32.1	70.2	4 37.7 +32.9	70.3	4 57.8 +33.8	70.4	5 17.9 +34.6	70.5	6 57.9 +35.4	70.6	8 58.0 +35.8	70.6	11 27.8 +34.3	62.3	11 55.5 +35.1	62.5	11 55.5 +35.1	62.5	11 55.5 +35.1	62.5	29
20	4 07.2 +30.4	69.2	4 28.4 +31.2	69.3	4 49.5 +32.1	69.4	5 10.6 +32.9	69.5	5 31.6 +33.7	69.6	5 52.5 +34.6	69.7	6 13.3 +35.4	69.8	6 34.0 +36.2	69.9	6 54.0 +36.2	70.0	7 10.2 +36.0	69.9	7 48.7 +36.2	69.9	7 48.7 +36.2	69.9	20
21	4 37.6 +30.3	68.4	4 59.6 +31.2	68.5	5 21.6 +32.0	68.5	5 43.5 +32.9	68.6	6 05.3 +33.7	68.7	6 27.1 +34.4	68.8	6 48.7 +35.2	68.9	7 10.2 +36.0	69.0	7 48.7 +35.2	69.0	7 48.7 +35.2	69.0	7 48.7 +35.2	69.0	7 48.7 +35.2	69.0	21
22	5 07.9 +30.3	67.5	5 30.8 +31.1	67.6	5 53.6 +32.0	67.7	6 16.4 +32.7	67.8	6 39.0 +33.5	67.9	7 01.5 +34.4	68.0	7 23.9 +35.2	68.1	7 46.2 +36.0	68.2	8 58.0 +35.8	68.2	10 22.1 +35.2	68.2	10 52.5 +35.2	68.2	10 52.5 +35.2	68.2	22
23	5 38.2 +30.2	66.6	6 01.9 +31.0	66.7	6 25.6 +31.8	66.8	6 49.1 +32.7	66.9	7 12.5 +33.5	67.1	7 35.9 +34.2	67.2	7 59.1 +35.1	67.3	8 22.2 +35.8	67.4	9 52.5 +35.6	67.4	10 44.9 +35.4	67.4	10 44.9 +35.4	67.4	10 44.9 +35.4	67.4	23
24	6 08.4 +30.1	65.8	6 32.9 +31.0	65.9	6 57.4 +31.8	66.0	7 21.8 +32.5	66.1	7 46.0 +33.4	66.2	8 10.1 +34.2	66.4	8 34.2 +34.9	66.5	9 53.3 +35.6	66.6	10 53.3 +35.6	66.6	11 20.3 +35.2	66.6	11 53.3 +35.2	66.6	11 53.3 +35.2	66.6	24
25	6 38.5 +30.0	64.9	7 03.9 +30.8	65.0	7 29.2 +31.6	65.1	7 54.3 +32.5	65.3	8 19.4 +33.3	65.4	8 44.3 +34.1	65.5	9 09.1 +34.9	65.7	9 33.8 +35.6	65.8	9 58.0 +35.6	65.8	10 44.9 +35.4	65.8	10 44.9 +35.4	65.8	10 44.9 +35.4	65.8	25
26	7 08.5 +29.9	64.0	7 34.7 +30.8	64.2	8 00.8 +31.6	64.3	8 26.8 +32.4	64.4	8 52.7 +33.1	64.5	9 18.4 +33.9	64.7	9 44.0 +34.7	64.8	10 09.4 +35.5	65.0	11 44.0 +35.5	65.0	12 20.3 +35.2	65.0	12 53.3 +35.2	65.0	12 53.3 +35.2	65.0	26
27	7 38.4 +29.8	63.2	8 05.5 +30.6	63.3	8 32.4 +31.4	63.4	8 59.2 +32.2	63.6	9 25.8 +33.0	63.7	9 52.3 +33.8	63.9	10 18.7 +34.6	64.0	10 44.9 +35.4	64.2	11 20.3 +35.2	64.2	11 53.3 +35.2	64.2	11 53.3 +35.2	64.2	11 53.3 +35.2	64.2	27
28	8 08.2 +29.7	62.3	8 36.1 +30.5	62.4	9 03.8 +31.3	62.6	9 31.4 +32.1	62.7	9 58.8 +32.9	62.9	10 26.1 +33.7	63.0	11 47.8 +34.3	63.1	12 17.8 +33.5	63.2	13 53.3 +35.1	63.3	14 49.4 +34.3	63.4	14 49.4 +34.3	63.4	14 49.4 +34.3	63.4	28
29	8 11.5 +29.6	61.4	8 37.1 +29.5	61.5	9 06.9 +30.4	61.6	9 31.7 +31.2	61.7	9 57.3 +32.8	61.8	10 30.4 +33.0	61.9	11 47.0 +33.8	62.0	12 17.8 +33.6	62.1	13 53.0 +35.6	62.2	14 49.0 +34.3	62.3	14 49.0 +34.3	62.3	14 49.0 +34.3	62.3	29
30	8 22.3 +29.5	60.5	8 37.6 +29.4	60.6	9 07.0 +30.2	60.7	9 30.0 +31.8	60.8	9 57.0 +32.6	60.9	10 34.7 +33.4	61.0	11 46.0 +33.2	6											

84°, 276° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.									
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z										
0	5 11.6 +30.1	93.0	5 08.4 +31.0	93.1	5 05.1 +31.9	93.2	5 01.8 +32.7	93.3	4 58.3 +33.6	93.4	4 54.7 +34.5	93.4	4 51.1 +35.3	93.5	4 47.3 +36.2	93.6	0	5 11.6 +30.1	93.0	5 08.4 +31.0	93.1	5 05.1 +31.9	93.2	5 01.8 +32.7	93.3	4 58.3 +33.6	93.4	4 54.7 +34.5	93.4	4 51.1 +35.3	93.5	4 47.3 +36.2	93.6	0
1	5 41.7 +30.0	92.1	5 39.4 +30.9	92.2	5 37.0 +31.8	92.3	5 34.5 +32.7	92.4	5 31.9 +33.6	92.5	5 29.2 +34.5	92.6	5 26.4 +35.3	92.7	5 23.5 +36.2	92.8	1	5 41.7 +30.0	92.1	5 39.4 +30.9	92.2	5 37.0 +31.8	92.3	5 34.5 +32.7	92.4	5 31.9 +33.6	92.5	5 29.2 +34.5	92.6	5 26.4 +35.3	92.7	5 23.5 +36.2	92.8	1
2	6 11.7 +29.9	91.3	6 10.3 +30.9	91.4	6 08.8 +31.8	91.5	6 07.2 +32.6	91.6	6 05.5 +33.5	91.7	6 03.7 +34.3	91.8	6 01.7 +35.3	91.9	5 59.7 +36.0	92.0	2	6 11.7 +29.9	91.3	6 10.3 +30.9	91.4	6 08.8 +31.8	91.5	6 07.2 +32.6	91.6	6 05.5 +33.5	91.7	6 03.7 +34.3	91.8	6 01.7 +35.3	91.9	5 59.7 +36.0	92.0	2
3	6 41.6 +29.9	90.4	6 41.2 +30.7	90.5	6 40.6 +31.6	90.6	6 39.8 +32.6	90.7	6 39.0 +33.4	90.9	6 38.0 +34.3	91.0	6 37.0 +35.1	91.1	6 35.7 +36.0	91.2	3	6 41.6 +29.9	90.4	6 41.2 +30.7	90.5	6 40.6 +31.6	90.6	6 39.8 +32.6	90.7	6 39.0 +33.4	90.9	6 38.0 +34.3	91.0	6 37.0 +35.1	91.1	6 35.7 +36.0	91.2	3
4	7 11.5 +29.7	89.5	7 11.9 +30.7	89.6	7 12.2 +31.6	89.8	7 12.4 +32.4	89.9	7 12.4 +33.3	90.0	7 12.3 +34.2	90.2	7 12.1 +35.1	90.3	7 11.7 +35.9	90.4	4	7 11.5 +29.7	89.5	7 11.9 +30.7	89.6	7 12.2 +31.6	89.8	7 12.4 +32.4	89.9	7 12.4 +33.3	90.0	7 12.3 +34.2	90.2	7 12.1 +35.1	90.3	7 11.7 +35.9	90.4	4
5	7 41.2 +29.6	88.6	7 42.6 +30.5	88.8	7 43.8 +31.4	88.9	7 44.8 +32.4	89.1	7 45.7 +33.3	89.2	7 46.5 +34.1	89.3	7 47.2 +34.9	89.5	7 47.6 +35.9	89.6	5	7 41.2 +29.6	88.6	7 42.6 +30.5	88.8	7 43.8 +31.4	88.9	7 44.8 +32.4	89.1	7 45.7 +33.3	89.2	7 46.5 +34.1	89.3	7 47.2 +34.9	89.5	7 47.6 +35.9	89.6	5
6	8 10.8 +29.5	87.8	8 13.1 +30.4	87.9	8 15.2 +31.3	88.1	8 17.2 +32.2	88.2	8 19.0 +33.1	88.3	8 20.6 +34.0	88.5	8 22.1 +34.9	88.6	8 23.5 +35.7	88.8	6	8 10.8 +29.5	87.8	8 13.1 +30.4	87.9	8 15.2 +31.3	88.1	8 17.2 +32.2	88.2	8 19.0 +33.1	88.3	8 20.6 +34.0	88.5	8 22.1 +34.9	88.6	8 23.5 +35.7	88.8	6
7	8 40.3 +29.4	86.9	8 43.5 +30.3	87.0	8 46.5 +31.3	87.2	8 49.4 +32.1	87.3	8 52.1 +33.0	87.5	8 54.6 +33.9	87.7	8 57.0 +34.7	87.8	8 59.2 +35.6	88.0	7	8 40.3 +29.4	86.9	8 43.5 +30.3	87.0	8 46.5 +31.3	87.2	8 49.4 +32.1	87.3	8 52.1 +33.0	87.5	8 54.6 +33.9	87.7	8 57.0 +34.7	87.8	8 59.2 +35.6	88.0	7
8	9 09.7 +29.3	86.0	9 13.8 +30.2	86.2	9 17.8 +31.0	86.3	9 21.5 +32.0	86.5	9 25.1 +32.9	86.7	9 28.5 +33.8	86.8	9 31.7 +34.7	87.0	9 34.8 +35.5	87.2	8	9 09.7 +29.3	86.0	9 13.8 +30.2	86.2	9 17.8 +31.0	86.3	9 21.5 +32.0	86.5	9 25.1 +32.9	86.7	9 28.5 +33.8	86.8	9 31.7 +34.7	87.0	9 34.8 +35.5	87.2	8
9	9 39.0 +29.1	85.1	9 44.0 +30.1	85.3	9 48.8 +31.0	85.5	9 53.5 +31.9	85.6	9 58.0 +32.7	85.8	10 02.3 +33.6	86.0	10 06.4 +34.5	86.2	10 10.3 +35.4	86.3	9	9 39.0 +29.1	85.1	9 44.0 +30.1	85.3	9 48.8 +31.0	85.5	9 53.5 +31.9	85.6	9 58.0 +32.7	85.8	10 02.3 +33.6	86.0	10 06.4 +34.5	86.2	10 10.3 +35.4	86.3	9
10	10 08.1 +29.0	84.2	10 14.1 +29.9	84.4	10 19.8 +30.8	84.6	10 25.4 +31.7	84.8	10 30.7 +32.6	85.0	10 35.9 +33.5	85.1	10 40.9 +34.4	85.3	10 45.7 +35.2	85.5	10	10 08.1 +29.0	84.2	10 14.1 +29.9	84.4	10 19.8 +30.8	84.6	10 25.4 +31.7	84.8	10 30.7 +32.6	85.0	10 35.9 +33.5	85.1	10 40.9 +34.4	85.3	10 45.7 +35.2	85.5	10
11	10 37.1 +28.8	83.3	10 44.0 +29.7	83.5	10 50.6 +30.7	83.7	10 57.1 +31.6	83.9	11 03.3 +32.5	84.1	11 09.4 +33.4	84.3	11 15.3 +34.2	84.5	11 20.9 +35.1	84.7	11	10 37.1 +28.8	83.3	10 44.0 +29.7	83.5	10 50.6 +30.7	83.7	10 57.1 +31.6	83.9	11 03.3 +32.5	84.1	11 09.4 +33.4	84.3	11 15.3 +34.2	84.5	11 20.9 +35.1	84.7	11
12	11 05.9 +28.7	82.4	11 13.7 +29.6	82.6	11 21.3 +30.5	82.8	11 28.7 +31.4	83.0	11 35.8 +32.3	83.2	11 42.8 +33.2	83.5	11 49.5 +34.1	83.7	11 56.0 +35.0	83.9	12	11 05.9 +28.7	82.4	11 13.7 +29.6	82.6	11 21.3 +30.5	82.8	11 28.7 +31.4	83.0	11 35.8 +32.3	83.2	11 42.8 +33.2	83.5	11 49.5 +34.1	83.7	11 56.0 +35.0	83.9	12
13	11 34.6 +28.5	81.6	11 43.3 +29.4	81.8	11 51.8 +30.4	82.0	12 00.1 +31.2	82.2	12 08.1 +32.2	82.4	12 16.0 +33.0	82.6	12 23.6 +33.9	82.8	12 31.0 +34.8	83.0	13	11 34.6 +28.5	81.6	11 43.3 +29.4	81.8	11 51.8 +30.4	82.0	12 00.1 +31.2	82.2	12 08.1 +32.2	82.4	12 16.0 +33.0	82.6	12 23.6 +33.9	82.8	12 31.0 +34.8	83.0	13
14	12 03.1 +28.3	80.7	12 12.7 +29.3	80.9	12 22.2 +30.1	81.1	12 31.3 +31.1	81.3	12 40.3 +32.0	81.5	12 49.0 +32.9	81.7	12 57.5 +33.8	82.0	13 05.8 +34.6	82.2	14	12 03.1 +28.3	80.7	12 12.7 +29.3	80.9	12 22.2 +30.1	81.1	12 31.3 +31.1	81.3	12 40.3 +32.0	81.5	12 49.0 +32.9	81.7	12 57.5 +33.8	82.0	13 05.8 +34.6	82.2	14
15	12 31.4 +28.2	79.8	12 42.0 +29.1	80.0	12 52.3 +30.0	80.2	13 02.4 +30.9	80.4	13 12.3 +31.8	80.7	13 21.9 +32.7	80.9	13 31.3 +33.6	81.1	13 40.4 +34.5	81.4	15	12 31.4 +28.2	79.8	12 42.0 +29.1	80.0	12 52.3 +30.0	80.2	13 02.4 +30.9	80.4	13 12.3 +31.8	80.7	13 21.9 +32.7	80.9	13 31.3 +33.6	81.1	13 40.4 +34.5	81.4	15
16	12 59.6 +28.0	78.8	13 11.1 +28.9	79.1	13 22.3 +29.8	79.3	13 33.3 +30.8	79.5	13 44.1 +31.6	79.8	13 54.6 +32.6	80.0	14 04.9 +33.4	80.3	14 14.9 +34.3	80.5	16	12 59.6 +28.0	78.8	13 11.1 +28.9	79.1	13 22.3 +29.8	79.3	13 33.3 +30.8	79.5	13 44.1 +31.6	79.8	13 54.6 +32.6	80.0	14 04.9 +33.4	80.3	14 14.9 +34.3	80.5	16
17	13 27.6 +27.7	77.9	13 40.0 +28.7	78.2	13 52.1 +29.7	78.4	14 04.1 +30.5	78.7	14 15.7 +31.5	78.9	14 27.2 +32.3	79.2	14 38.3 +33.2	79.4	14 49.2 +34.1	79.7	17	13 27.6 +27.7	77.9	13 40.0 +28.7	78.2	13 52.1 +29.7	78.4	14 04.1 +30.5	78.7	14 15.7 +31.5	78.9	14 27.2 +32.3	79.2	14 38.3 +33.2	79.4	14 49.2 +34.1	79.7	17
18	13 55.3 +27.6	77.0	14 08.7 +28.5	77.3	14 21.8 +29.4	77.5	14 34.6 +30.3	77.8	14 47.2 +31.2	78.0	14 59.5 +32.1	78.3	15 11.5 +33.1	78.6	15 23.3 +33.9	78.8	15	13 55.3 +27.6	77.0	14 08.7 +28.5	77.3	14 21.8 +29.4	77.5	14 34.6 +30.3	77.8	14 47.2 +31.2	78.0	14 59.5 +32.1	78.3	15 11.5 +33.1	78.6	15 23.3 +33.9	78.8	15
19	14 22.9 +27.3	76.1	14 37.2 +28.2	76.4	15 51.4 +29.2	76.6	15 59.0 +30.2	76.8	15 67.0 +31.2	77.0	15 75.1 +32.2	77.2	15 83.2 +33.2	77.4	15 91.3 +34.2	77.6	15	14 22.9 +27.3	76.1	14 37.2 +28.2	76.4	15 51.4 +29.2	76.6	15 59.0 +30.2	76.8	15 67.0 +31.2	77.0	15 75.1 +32.2	77.2	15 83.2 +33.2	77.4	15 91.3 +34.2	77.6	15
20	17 03.5 +25.9	70.5	17 23.4 +26.8	70.8	17 42.9 +27.8	71.1	18 02.2 +28.7	71.4	18 21.2 +29.5	71.7	18 39.8 +30.5	72.1	18 58.1 +31.4	72.4	19 16.1 +32.3	72.7	19	17 03.5 +25.9	70.5	17 23.4 +26.8	70.8	17 42.9 +27.8	71.1	18 02.2 +28.7	71.4	18 21.2 +29.5	71.7	18 39.8 +30.5	72.1	18 58.1 +31.4	72.4	19 16.1 +32.3	72.7	19
21	18 09.5 +22.8	60.9	21 38.5 +23.8	61.2	22 07.3 +24.6	61.6	22 35.7 +25.5	61.9	23 03.7 +26.5	62.3	23 31.4 +27.4	62.7	23 58.8 +28.2	63.1	24 25.8 +29.1	63.5	25	18 09.5 +22.8	60.9	21 38.5 +23.8	61.2	22 07.3 +24.6	61.6	22 35.7 +25.5	61.9	23 03.7 +26.5	62.3	23 31.4 +27.4	62.7	23 58.8 +28.2	63.1	24 25.8 +29.1	63.5	25
22	21 32.3 +22.5	59.9	22 02.3 +23.3	60.2	22 31.9 +24.3	60.6	23 01.2 +25.2	61.0	23 30.2 +26.0	61.3	23 58.8 +28.2	61.7	24 27.0 +																					

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 84°, 276°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	5 11.6 -30.1	93.0	5 08.4 -31.0	93.1	5 05.1 -31.9	93.2	5 01.8 -32.9	93.3	4 58.3 -33.7	93.4	4 54.7 -34.6	93.4	4 51.1 -35.5	93.5	4 47.3 -36.2	93.6	4 43.0 -36.9	93.7	4 39.7 -37.6	93.8	4 36.4 -38.3	93.9	4 33.1 -39.0	94.0	0
1	4 41.5 -30.3	93.9	4 37.4 -31.2	94.0	4 33.2 -32.0	94.0	4 28.9 -32.9	94.1	4 24.6 -33.8	94.2	4 20.1 -34.6	94.3	4 15.6 -35.4	94.3	4 11.1 -36.4	94.4	4 6.6 -37.3	94.5	3 34.7 -36.3	95.2	3 30.2 -37.0	95.2	3 26.7 -37.7	95.2	2
2	4 11.2 -30.2	94.7	4 06.2 -31.1	94.8	4 01.2 -32.1	94.9	3 56.0 -32.9	95.0	3 50.8 -33.8	95.0	3 45.5 -34.6	95.1	3 40.2 -35.5	95.2	3 34.7 -36.3	95.2	3 30.4 -37.1	95.2	3 26.1 -37.9	95.2	3 22.0 -38.4	95.8	3 18.9 -39.0	96.0	3
3	3 41.0 -30.4	95.6	3 35.1 -31.3	95.7	3 29.1 -32.1	95.7	3 23.1 -33.0	95.8	3 17.0 -33.9	95.9	3 10.9 -34.8	95.9	3 04.7 -35.6	96.0	2 58.4 -36.4	96.0	2 22.0 -36.4	96.8	2 18.7 -37.1	96.8	2 14.5 -37.6	96.8	2 10.2 -38.4	96.8	4
4	3 10.6 -30.3	96.5	3 03.8 -31.2	96.5	2 57.0 -32.2	96.6	2 50.1 -33.0	96.6	2 43.1 -33.8	96.7	2 36.1 -34.7	96.7	2 29.1 -35.6	96.8	2 22.0 -36.4	96.8	2 18.7 -37.1	96.8	2 14.5 -37.6	96.8	2 10.2 -38.4	96.8	2 6.6 -39.0	96.8	4
5	2 40.3 -30.4	97.3	2 32.6 -31.3	97.4	2 24.8 -32.1	97.4	2 17.1 -33.1	97.5	2 09.3 -34.0	97.5	2 01.4 -34.8	97.5	1 53.5 -35.6	97.6	1 45.6 -36.4	97.6	1 39.4 -37.1	97.6	1 33.7 -37.6	97.6	1 29.7 -38.4	97.6	1 25.6 -39.0	97.6	5
6	2 09.9 -30.5	98.2	2 01.3 -31.3	98.2	1 52.7 -32.2	98.3	1 44.0 -33.1	98.3	1 35.3 -33.9	98.3	1 26.6 -34.7	98.4	1 17.9 -35.6	98.4	1 09.2 -36.5	98.4	1 05.2 -37.1	98.4	1 01.9 -37.6	98.4	1 03.7 -38.1	98.4	1 00.0 -38.6	98.4	6
7	1 39.4 -30.4	99.1	1 30.0 -31.4	99.1	1 20.5 -32.3	99.1	1 10.9 -33.0	99.1	1 01.4 -33.9	99.2	0 51.9 -34.8	99.2	0 42.3 -35.6	99.2	0 27.5 -34.0	100.0	0 06.7 -35.7	100.0	0 03.7 -36.5	100.0	0 00.7 -37.5	100.0	0 00.0 -38.0	100.0	8
8	1 09.0 -30.5	99.9	0 58.6 -31.4	99.9	0 48.2 -32.2	100.0	0 37.9 -33.1	100.0	0 27.2 -32.2	100.8	0 04.8 -33.1	100.8	0 06.5 -33.9	100.8	0 00.0 -35.6	100.8	0 04.0 -36.4	100.8	0 00.0 -36.4	100.8	0 00.0 -36.4	100.8	0 00.0 -36.4	100.8	9
9	0 38.5 -30.5	100.8	0 27.2 -31.3	100.8	0 16.0 -32.2	100.8	0 04.8 -33.1	100.8	0 06.5 -33.9	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	0 00.0 -35.6	100.8	9
10	0 08.0 -30.5	101.6	0 04.1 +31.4	78.4	0 16.2 +32.3	78.4	0 28.3 +33.1	78.4	0 40.4 +34.0	78.4	0 52.5 +34.8	78.4	1 04.6 +35.6	78.4	1 16.6 +36.5	78.4	1 30.0 +37.4	78.4	1 40.2 +36.4	78.4	1 40.2 +36.4	78.4	1 40.2 +36.4	78.4	10
11	0 22.5 +30.5	77.5	0 35.5 +31.3	77.5	0 48.5 +32.2	77.5	1 01.4 +33.1	77.5	1 14.4 +33.9	77.5	1 27.3 +34.8	77.6	1 40.2 +35.6	77.6	1 53.1 +36.4	77.6	2 29.5 +36.4	76.8	2 29.5 +36.4	76.8	2 29.5 +36.4	76.8	2 29.5 +36.4	76.8	11
12	0 53.0 +30.4	76.6	1 06.8 +31.4	76.6	1 20.7 +32.2	76.7	1 34.5 +33.1	76.7	1 48.3 +33.9	76.7	2 02.1 +34.7	76.8	2 15.8 +35.6	76.8	3 05.9 +36.3	76.0	3 42.2 +36.3	75.2	3 42.2 +36.3	75.2	3 42.2 +36.3	75.2	3 42.2 +36.3	75.2	14
13	1 23.4 +30.5	75.8	1 38.2 +31.3	75.8	1 52.9 +32.2	75.8	2 07.6 +33.0	75.9	2 22.2 +33.9	75.9	2 36.8 +34.7	75.9	2 51.4 +35.5	75.9	3 26.9 +35.5	75.2	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	15
14	1 53.9 +30.4	74.9	2 09.5 +31.3	74.9	2 25.1 +32.1	75.0	2 40.6 +33.0	75.0	2 56.1 +33.8	75.1	3 11.5 +34.7	75.1	3 26.9 +35.5	75.2	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	15
15	2 24.3 +30.4	74.0	2 40.8 +31.3	74.1	2 57.2 +32.1	74.1	3 13.6 +33.0	74.2	3 29.9 +33.8	74.2	3 46.2 +34.6	74.3	4 02.4 +35.4	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	4 18.5 +36.3	74.4	15
16	2 54.7 +30.4	73.2	3 12.1 +31.2	73.2	3 29.3 +32.1	73.3	3 46.6 +32.9	73.4	4 03.7 +33.8	73.4	4 20.8 +34.6	73.5	4 37.8 +35.4	73.6	5 54.8 +36.2	73.6	5 54.8 +36.2	73.6	5 54.8 +36.2	73.6	5 54.8 +36.2	73.6	5 54.8 +36.2	73.6	16
17	3 25.1 +30.3	72.3	3 43.3 +31.1	72.4	4 01.4 +32.0	72.4	4 19.5 +32.8	72.5	4 37.5 +33.6	72.6	4 55.4 +34.5	72.7	5 13.2 +35.3	72.8	5 31.0 +36.1	72.8	5 31.0 +36.1	72.8	5 31.0 +36.1	72.8	5 31.0 +36.1	72.8	5 31.0 +36.1	72.8	17
18	3 55.4 +30.2	71.5	4 14.4 +31.1	71.5	4 33.4 +32.0	71.6	4 52.3 +32.8	71.7	5 11.1 +33.7	71.8	5 29.9 +34.4	71.8	5 48.5 +35.3	71.9	6 07.1 +36.0	72.0	6 07.1 +36.0	72.0	6 07.1 +36.0	72.0	6 07.1 +36.0	72.0	6 07.1 +36.0	72.0	18
19	4 25.6 +30.2	70.6	4 45.5 +31.1	70.7	5 05.4 +31.8	70.7	5 25.1 +32.7	70.8	5 44.8 +33.5	70.9	6 04.3 +34.4	71.0	6 23.8 +35.2	71.1	6 43.1 +36.0	71.2	7 19.1 +35.9	70.4	7 19.1 +35.9	70.4	7 19.1 +35.9	70.4	7 19.1 +35.9	70.4	20
20	4 55.8 +30.1	69.7	5 16.6 +30.9	69.8	5 37.2 +31.9	69.9	5 57.8 +32.7	70.0	6 18.3 +33.5	70.1	6 38.7 +34.3	70.2	6 59.0 +35.1	70.3	7 19.1 +35.9	70.4	7 55.0 +35.8	69.5	7 55.0 +35.8	69.5	7 55.0 +35.8	69.5	7 55.0 +35.8	69.5	20
21	5 25.9 +30.1	68.9	5 47.5 +30.9	68.9	6 09.1 +31.7	69.0	6 30.5 +32.5	69.1	6 51.8 +33.4	69.3	7 13.0 +34.2	69.4	7 34.1 +35.0	69.5	7 55.0 +35.8	69.6	7 55.0 +35.8	69.6	7 55.0 +35.8	69.6	7 55.0 +35.8	69.6	7 55.0 +35.8	69.6	21
22	5 56.0 +30.0	68.0	6 18.4 +30.9	68.1	6 40.8 +31.6	68.2	7 03.0 +32.5	68.3	7 25.2 +33.2	68.4	7 47.2 +34.1	68.5	8 09.1 +34.9	68.7	8 30.8 +35.7	68.8	8 30.8 +35.7	68.8	8 30.8 +35.7	68.8	8 30.8 +35.7	68.8	8 30.8 +35.7	68.8	22
23	6 26.0 +29.8	67.1	6 49.3 +30.7	67.2	7 12.4 +31.6	67.3	7 35.5 +32.4	67.5	7 58.4 +33.2	67.6	8 21.3 +34.0	67.7	8 44.0 +34.8	67.8	9 06.5 +35.6	68.0	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	23
24	6 55.8 +29.8	66.2	7 20.0 +30.6	66.4	7 44.0 +31.4	66.5	8 07.9 +32.2	66.6	8 31.6 +33.8	66.7	8 55.3 +33.8	66.9	9 18.8 +34.6	67.0	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	9 42.1 +35.5	67.2	24
25	7 25.6 +29.7	65.4	7 50.6 +30.5	65.5	8 15.4 +31.4	65.6	8 40.1 +32.2	65.7	9 04.7 +33.0	65.9	9 29.1 +33.8	66.0	9 53.4 +34.6	66.2	10 17.6 +35.3	66.4	10 42.4 +35.5	66.4	10 42.4 +35.5	66.4	10 42.4 +35.5	66.4	10 42.4 +35.5	66.4	25
26	7 55.3 +29.6	64.5	8 21.1 +30.4	64.6	8 46.8 +31.2	64.7	9 12.3 +32.0	64.9	9 37.7 +32.8	65.0	10 02.9 +33.6	65.2	10 28.0 +34.4	65.4	10 52.9 +35.2	65.5	11 28.1 +35.1	65.6	11 28.1 +35.1	65.6	11 28.1 +35.1	65.6	11 28.1 +35.1	65.6	26
27	8 24.9 +29.4	63.6	8 51.5 +30.3	63.7	9 18.0 +31.1	63.9	9 44.3 +31.9	64.0	10 10.5 +32.7	64.2	10 36.5 +33.5	64.4	11 02.4 +34.3	64.5	11 28.1 +35.1	64.7	11 28.1 +35.1	64.7	11 28.1 +35.1	64.7	11 28.1 +35.1	64.7	11 28.1 +35.1	64.7	27
28	8 54.3 +29.4	62.7	9 21.8 +30.1	62.9	9 49.1 +30.9	63.0	10 16.2 +31.8	63.2	10 43.2 +32.6	63.3	11 10.0 +33.4	63.5	11 36.7 +34.2	63.7	12 03.2 +34.9	63.9	12 30.4 +35.0	64.0	12 30.4 +35.0	64.0	12 30.4 +35.0	64.0	12 30.4 +35.0	64.0	28
29	9 48.2 +28.4	57.4	12 20.4 +29.3	57.5	12 49.7 +29.0	57.6	18 10.9 +27.5	47.7	20 51.1 +28.2	48.0	20 31.2 +28.7	47.3	20 40.7 +29.3	47.6	21 21.0 +30.1	47.9	22 01.2 +30.7	48.2	22 01.2 +30.7	48.2	22 01.2 +30.7	48.2	22 01.2 +30.7	48.2	29
30	12 16.6 +28.3	56.5	12 49.7 +28.0	56.6	13 22.5 +29.9	56.7	14 25.8 +30.4	56.2	14 59.1 +31.2	56.4	15 32.2 +3														

85°, 275° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.																		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z																			
0	4 19.7 +30.1	92.5	4 17.1 +30.9	92.6	4 14.3 +31.9	92.7	4 11.5 +32.7	92.7	4 08.6 +33.6	92.8	4 05.6 +34.5	92.9	4 02.6 +35.3	92.9	3 59.5 +36.2	93.0	0	0	,	,	,	,	,	,	0																		
1	4 49.8 +30.0	91.6	4 48.0 +30.9	91.7	4 46.2 +31.8	91.8	4 44.2 +32.7	91.9	4 42.2 +33.6	92.0	4 40.1 +34.4	92.1	4 37.9 +35.3	92.1	4 35.7 +36.1	92.2	1	7 18.9 +29.6	87.3	7 21.7 +30.5	87.4	7 24.4 +31.3	87.5	7 26.9 +32.2	87.7	7 29.3 +33.1	87.8	7 31.5 +34.0	87.9	7 33.6 +34.9	88.1	7 35.6 +35.7	88.2	6									
2	5 19.8 +29.9	90.8	5 18.9 +30.8	90.9	5 18.0 +31.7	91.0	5 16.9 +32.6	91.0	5 15.8 +33.5	91.1	5 14.5 +34.4	91.2	5 13.2 +35.2	91.3	5 11.8 +36.0	91.4	2	7 48.5 +29.4	86.4	7 52.2 +30.3	86.5	7 55.7 +31.3	86.7	7 59.1 +32.2	86.8	8 02.4 +33.0	87.0	8 05.5 +33.9	87.1	8 08.5 +34.8	87.2	8 11.3 +35.7	87.4	7									
3	5 49.7 +29.8	89.9	5 49.7 +30.8	90.0	5 49.7 +31.6	90.1	5 49.5 +32.6	90.2	5 49.3 +33.4	90.3	5 48.9 +34.3	90.4	5 48.4 +35.2	90.5	5 47.8 +36.0	90.6	3	6 19.5 +29.8	89.0	6 20.5 +30.6	89.1	6 21.3 +31.6	89.2	6 22.1 +32.4	89.4	6 22.7 +33.3	89.5	6 23.2 +34.2	89.6	6 23.6 +35.0	89.7	6 23.8 +35.9	89.8	4									
4	6 49.3 +29.6	88.1	6 51.1 +30.6	88.3	6 52.9 +31.5	88.4	6 54.5 +32.4	88.5	6 56.0 +33.3	88.6	6 57.4 +34.1	88.8	6 58.6 +35.0	88.9	6 59.7 +35.9	89.0	5	7 18.9 +29.6	87.3	7 21.7 +30.5	87.4	7 24.4 +31.3	87.5	7 26.9 +32.2	87.7	7 29.3 +33.1	87.8	7 31.5 +34.0	87.9	7 33.6 +34.9	88.1	7 35.6 +35.7	88.2	6									
5	7 18.9 +29.6	87.3	7 21.7 +30.5	87.4	7 24.4 +31.3	87.5	7 26.9 +32.2	87.7	7 29.3 +33.1	87.8	7 31.5 +34.0	87.9	7 33.6 +34.9	88.1	7 35.6 +35.7	88.2	6	7 48.5 +29.4	86.4	7 52.2 +30.3	86.5	7 55.7 +31.3	86.7	7 59.1 +32.2	86.8	8 02.4 +33.0	87.0	8 05.5 +33.9	87.1	8 08.5 +34.8	87.2	8 11.3 +35.7	87.4	7									
6	8 17.9 +29.3	85.5	8 22.5 +30.3	85.7	8 27.0 +31.1	85.8	8 31.3 +32.0	86.0	8 35.4 +33.0	86.1	8 39.4 +33.9	86.3	8 43.3 +34.7	86.4	8 47.0 +35.5	86.6	8	8 47.2 +29.2	84.6	8 52.8 +30.1	84.8	8 58.1 +31.1	84.9	9 03.3 +32.0	85.1	9 08.4 +32.8	85.3	9 13.3 +33.7	85.4	9 18.0 +34.5	85.6	9 22.5 +35.4	85.7	9									
7	9 16.4 +29.1	83.7	9 22.9 +30.0	83.9	9 29.2 +30.9	84.1	9 35.3 +31.8	84.2	9 41.2 +32.7	84.4	9 47.0 +33.5	84.6	9 52.5 +34.5	84.8	9 57.9 +35.3	84.9	10	9 45.5 +28.9	82.9	10 00.1 +30.7	83.2	10 07.1 +31.6	83.4	10 13.9 +32.6	83.6	10 20.5 +33.5	83.7	10 27.0 +34.3	83.9	10 33.2 +35.2	84.1	10 38.7 +35.4	84.1	11									
8	10 14.4 +28.8	82.0	10 22.7 +29.7	82.2	10 30.8 +30.7	82.3	10 38.7 +31.6	82.5	10 46.5 +32.4	82.7	10 54.0 +33.3	82.9	11 01.3 +34.2	83.1	11 10.8 +32.2	81.9	11 27.3 +33.1	82.0	11 35.5 +34.0	82.3	11 43.5 +34.9	82.5	11 48.4 +35.1	83.3	12 01.3 +34.2	83.1	12 18.4 +34.7	81.6	12														
9	11 11.9 +28.4	80.2	11 22.0 +29.4	80.4	11 31.9 +30.3	80.6	11 41.6 +31.3	80.8	11 51.1 +32.2	81.0	12 00.4 +33.0	81.2	12 09.5 +33.9	81.4	12 18.4 +34.7	81.6	12	11 19.8 +28.4	79.7	12 02.2 +30.2	79.7	12 12.9 +31.0	79.9	12 23.3 +31.9	80.1	12 33.4 +32.9	80.3	12 43.4 +33.7	80.6	12 53.1 +34.6	80.8	12 53.1 +34.6	80.8	15									
10	12 08.7 +28.1	78.4	12 20.6 +29.1	78.6	12 32.4 +29.9	78.8	12 43.9 +30.9	79.0	12 55.2 +31.8	79.3	13 06.3 +32.6	79.5	13 17.1 +33.5	79.7	13 27.7 +34.4	79.9	13	12 36.8 +27.9	77.5	12 49.7 +28.9	77.7	13 02.3 +29.8	77.9	13 27.0 +31.6	78.2	13 38.9 +32.5	78.6	13 50.6 +33.4	78.9	14 02.1 +34.3	79.1	14 36.4 +34.0	78.3	17									
11	13 04.7 +27.8	76.6	13 18.6 +28.6	76.8	13 32.1 +29.7	77.0	13 45.5 +30.5	77.3	13 58.6 +31.4	77.5	14 11.4 +32.3	77.8	14 24.0 +33.2	78.0	14 40.4 +33.9	78.2	14	13 24.0 +27.8	75.5	13 47.2 +28.5	75.9	14 01.7 +29.4	76.1	14 20.0 +30.3	76.4	14 43.7 +32.1	76.9	14 57.2 +33.0	77.1	15 10.4 +33.9	77.4	15 24.6 +33.1	77.4	19									
12	14 00.1 +27.3	74.7	14 15.7 +28.3	75.0	14 31.1 +29.2	75.2	14 46.3 +30.1	75.5	15 01.2 +31.0	75.7	15 15.8 +31.9	76.0	15 30.2 +32.8	76.3	15 44.3 +33.7	76.6	15	14 27.4 +27.1	73.8	14 44.0 +28.1	74.1	15 00.3 +29.0	74.3	15 16.4 +29.8	74.6	15 32.2 +30.8	74.9	15 47.7 +31.7	75.1	16 03.0 +32.6	75.4	16 18.0 +33.4	75.7	21									
13	14 54.5 +27.0	72.9	15 12.1 +27.8	73.2	15 29.3 +28.8	73.4	15 46.3 +29.6	73.7	16 03.0 +30.6	74.0	16 19.4 +31.5	74.2	16 35.6 +32.3	74.5	16 51.4 +33.2	74.8	16	15 21.5 +26.6	72.0	15 39.9 +27.6	72.2	15 58.1 +28.5	72.5	16 15.9 +29.5	72.8	16 33.6 +30.3	73.1	16 50.9 +31.2	73.4	17 07.9 +32.1	73.7	17 24.6 +33.1	74.0	23									
14	15 48.1 +26.5	71.1	16 07.5 +27.4	71.3	16 26.6 +28.3	71.6	16 45.4 +29.2	71.9	17 03.9 +30.1	72.2	17 22.1 +31.0	72.5	17 40.0 +31.9	72.8	17 57.7 +32.7	73.1	17	16 14.6 +26.2	70.1	16 34.9 +27.1	70.4	17 14.6 +28.9	70.7	17 34.0 +29.8	71.0	17 53.1 +30.8	71.3	18 11.9 +31.7	71.9	18 30.4 +32.6	72.2	18 30.4 +32.6	72.2	25									
15	16 14.6 +26.2	70.1	16 34.9 +27.1	70.4	16 54.9 +28.0	70.7	17 14.6 +28.9	71.0	17 34.0 +29.8	71.3	17 53.1 +30.8	71.6	18 11.9 +31.7	71.9	18 30.4 +32.6	72.2	18	17 32.4 +25.4	67.3	17 55.5 +26.3	66.3	18 21.8 +26.0	66.6	18 45.4 +27.0	66.9	19 08.8 +27.8	67.3	19 31.8 +28.6	67.6	19 54.5 +29.7	67.9	20 16.9 +30.5	68.3	20 38.9 +31.5	68.6	29							
16	18 23.0 +24.8	65.4	18 47.8 +25.8	65.7	19 12.4 +26.6	66.0	19 36.6 +27.6	66.3	20 00.6 +28.4	66.7	20 24.2 +29.3	67.0	20 47.4 +30.3	67.3	21 10.4 +31.1	67.7	30	18 47.8 +24.6	64.4	19 13.6 +25.4	64.7	19 39.0 +26.4	65.1	20 04.2 +27.3	65.4	20 29.0 +28.2	65.7	20 53.5 +29.1	66.1	21 17.7 +30.0	67.0	21 35.2 +32.0	70.4	27									
17	19 06.7 +25.7	68.2	19 28.9 +26.6	68.5	19 50.7 +27.5	68.8	18 12.2 +28.4	69.1	18 33.4 +29.3	69.4	18 54.3 +30.3	69.8	19 14.9 +31.2	70.1	19 35.2 +32.0	70.4	19	17 32.4 +25.4	67.3	17 55.5 +26.3	67.6	18 21.8 +26.7	67.9	18 40.6 +28.1	68.5	19 24.6 +29.6	69.5	19 46.1 +30.8	69.9	20 07.2 +31.7	69.5	28											
18	19 32.4 +25.4	67.3	17 55.5 +26.3	67.6	18 18.2 +27.2	67.9	18 40.6 +28.2	68.2	19 02.7 +29.1	68.5	19 24.6 +29.8	68.8	19 46.1 +30.8	69.2	20 07.2 +31.7	69.7	20	16 46.6 +25.6	61.5	17 57.2 +25.4	62.2	18 21.2 +25.1	61.2	21 51.3 +26.0	61.5	22 19.8 +26.8	61.9	22 47.8 +27.8	62.3	23 15.6 +28.6	62.7	23 43.0 +29.5	63.0	35									
19	20 40.8 +22.0	59.6	21 17.7 +23.8	59.9	21 47.7 +24.7	60.2	22 17.3 +25.6	60.6	22 46.6 +26.5	60.9	23 15.6 +27.4	61.3	23 44.2 +28.3	61.7	24 12.5 +29.1	62.1	36	21 10.4 +22.6	58.6	21 41.5 +23.6	59.1	21 47.4 +24.2	59.5	22 12.4 +25.4	60.4	22 41.6 +28.8	61.1	24 41.6 +28.8	61.1	37	21 33.0 +22.2	59.6	21 30.0 +23.1	59.7	23 30.0 +24.5	60.6	24 05.0 +25.4	60.7	24 40.4 +27.5	60.9	24 40.4 +27.5	60.9	38
20	20 24.2 +23.2	60.5	20 53.5 +24.2	60.9	21 22.6 +25.1	61.2	21 51.3 +26.0	61.5	22 19.8 +26.8	61.9	22 47.8 +27.8	62.3	23 15.6 +28.6	62.7	23 43.0 +29.5	63.0	35	20 47.4 +23.0	59.6	21 47.7 +23.8	60.2	22 17.3 +25.6	60.6	22 46.6 +26.5	60.9	23 43.0 +29.5	61.3	24 12.5 +29.1	61.7	24 41.6 +28.8	61.1	36											
21	22 17.1 +21.5	55.6	22 50.9 +22.4	55.9	23 47.6 +22.9	55.3	24 21.6 +23.8	55.6	24 55.4 +24.5	56.0	25 28.7 +25.5	56.4	25 53.5 +24.2	56.0	26 12.5 +27.9	56.7	36	22 36.8 +21.3	53.1	23 35.2 +21.3	53.4	24 27.7 +22.3	53.7	25 40.0 +23.3	54.1	25 47.7 +24.6	54.2	26 45.5 +25.5	54.8	27 28.4 +26.4	55.2	44											
22	24 00.7 +19.5	50.5	24 38.8 +20.3	50.8	25 16.5 +21.2	51.2	25 54.0 +22.0	51.5	26 31.2 +22.8	51.8	27 08.0 +23.7	52.3	27 44.5 +24.6	52.7	28 20.6 +25.5	53.2	28	20 47.4 +23.0	49.1	21 49.3 +23.8	50.1	22 31.7 +23.3	51.3	28																			

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 85° , 275°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	4	19.7	-30.1	92.5	4	17.1	-31.1	92.6	4	14.3	-31.9	92.7	4	11.5	-32.8	92.7	4	08.6	-33.7	92.8	4	05.6	-34.5	92.9	4	02.6	-35.4	92.9	3	59.5	-36.2	93.0	0
1	3	49.6	-30.2	93.4	3	46.0	-31.0	93.4	3	42.4	-31.9	93.5	3	38.7	-32.8	93.6	3	34.9	-33.7	93.6	3	31.1	-34.6	93.7	3	27.2	-35.4	93.8	3	23.3	-36.3	93.8	1
2	3	19.4	-30.2	94.2	3	15.0	-31.1	94.3	3	10.5	-32.0	94.4	3	05.9	-32.9	94.4	3	01.2	-33.7	94.5	2	56.5	-34.6	94.5	2	51.8	-35.5	94.6	2	47.0	-36.3	94.6	2
3	2	49.2	-30.2	95.1	2	43.9	-31.2	95.2	2	38.5	-32.1	95.2	2	33.0	-32.9	95.2	2	27.5	-33.8	95.3	2	21.9	-34.6	95.3	2	16.3	-35.4	95.4	2	10.7	-36.3	95.4	3
4	2	19.0	-30.3	96.0	2	12.7	-31.2	96.0	2	06.4	-32.0	96.0	2	00.1	-32.9	96.1	1	53.7	-33.8	96.1	1	47.3	-34.6	96.1	1	40.9	-35.5	96.2	1	34.4	-36.3	96.2	4
5	1	48.7	-30.3	96.8	1	41.5	-31.2	96.9	1	34.4	-32.1	96.9	1	27.2	-33.0	96.9	1	19.9	-33.8	96.9	1	12.7	-34.7	97.0	1	05.4	-35.5	97.0	0	58.1	-36.4	97.0	5
6	1	18.4	-30.3	97.7	1	10.3	-31.2	97.7	1	02.3	-32.1	97.7	0	54.2	-33.0	97.8	0	46.1	-33.8	97.8	0	38.0	-34.7	97.8	0	29.9	-35.6	97.8	6				
7	0	48.1	-30.4	98.6	0	39.1	-31.2	98.6	0	30.2	-32.1	98.6	0	21.2	-32.9	98.6	0	12.3	-33.9	98.6	0	03.3	-34.7	98.6	0	05.7	+35.5	81.4	7				
8	0	17.7	-30.3	99.4	0	0.79	-31.2	99.4	0	0.19	+31.2	80.6	0	11.7	+33.0	80.6	0	21.6	+33.8	80.6	0	31.4	+34.7	80.6	0	41.2	+35.5	80.6	0				
9	0	12.6	+30.3	79.7	0	23.3	+31.2	79.7	0	34.0	+32.1	79.7	0	44.7	+33.0	79.7	0	55.4	+33.8	79.8	1	06.1	+34.6	79.8	1	16.7	+35.5	79.8	9				
10	0	42.9	+30.4	78.9	0	54.5	+31.2	78.9	1	06.1	+32.1	78.9	1	17.7	+32.9	78.9	1	29.2	+33.8	78.9	1	40.7	+34.6	79.0	1	52.2	+35.5	79.0	2				
11	1	13.3	+30.3	78.0	1	25.7	+31.2	78.0	1	38.2	+32.1	78.0	1	50.6	+32.9	78.1	2	03.0	+33.8	78.1	2	15.3	+34.7	78.2	2	23.9	+36.3	78.2	11				
12	1	43.6	+30.3	77.1	1	56.9	+31.2	77.2	2	10.3	+32.0	77.2	2	23.5	+32.9	77.2	2	36.8	+33.7	77.3	2	50.0	+34.5	77.3	3	03.1	+35.4	77.4	12				
13	2	13.9	+30.2	76.3	2	28.1	+31.1	76.3	2	42.3	+32.0	76.3	2	56.4	+32.9	76.4	3	10.5	+33.7	76.4	3	24.5	+34.6	76.5	3	38.5	+35.4	76.6	13				
14	2	44.1	+30.2	75.4	2	59.2	+31.1	75.4	3	14.3	+31.9	75.5	3	29.3	+32.8	75.6	3	44.2	+33.7	75.6	4	13.9	+35.3	75.8	4	28.6	+36.1	75.8	14				
15	3	14.3	+30.2	74.5	3	30.3	+31.1	74.6	3	46.2	+31.9	74.7	4	02.1	+32.7	74.7	4	17.9	+33.6	74.8	4	33.6	+34.4	74.9	4	49.2	+35.2	74.9	5				
16	3	44.5	+30.1	73.7	4	01.4	+30.9	73.7	4	18.1	+31.9	73.8	4	34.8	+32.7	73.9	4	51.5	+33.5	74.0	5	08.0	+34.4	74.0	5	24.4	+35.2	74.1	16				
17	4	14.6	+30.1	72.8	4	32.3	+31.0	72.9	4	50.0	+31.8	73.0	5	07.5	+32.7	73.0	5	25.0	+33.5	73.1	5	42.4	+34.3	73.2	5	59.6	+35.2	73.3	17				
18	4	44.7	+30.0	71.9	5	03.3	+30.8	72.0	5	21.8	+31.7	72.1	5	40.2	+32.5	72.2	5	58.5	+33.3	72.3	6	16.7	+34.2	72.4	6	34.8	+35.0	72.5	6				
19	5	14.7	+29.9	71.1	5	34.1	+30.8	71.2	5	53.5	+31.6	71.2	6	12.7	+32.5	71.3	6	31.8	+33.4	71.5	6	50.9	+34.1	71.6	7	09.8	+34.9	71.7	19				
20	5	44.6	+29.9	70.2	6	04.9	+30.7	70.3	6	25.1	+31.6	70.4	6	45.2	+32.4	70.5	7	05.2	+33.2	70.6	7	25.0	+34.1	70.7	7	44.7	+34.9	70.9	8				
21	6	14.5	+29.7	69.3	6	35.6	+30.6	69.4	6	56.7	+31.4	69.5	7	17.6	+32.3	69.7	7	38.4	+33.1	69.8	7	59.1	+33.9	69.9	8	19.6	+34.8	70.0	8				
22	6	44.2	+29.7	68.4	7	06.2	+30.6	68.6	7	28.1	+31.4	68.7	7	49.9	+32.8	68.8	8	11.5	+33.0	68.9	8	30.0	+33.8	69.1	8	54.4	+34.6	69.2	9				
23	7	13.9	+29.6	67.6	7	36.8	+30.4	67.7	7	59.5	+31.2	67.8	8	22.1	+32.0	68.0	8	44.5	+32.9	68.1	9	06.8	+33.7	68.2	9	29.0	+34.5	68.4	9				
24	7	43.5	+29.4	66.7	8	07.2	+30.3	66.8	8	30.7	+31.2	67.0	8	54.1	+32.0	67.1	9	17.4	+32.8	67.2	9	40.5	+33.6	67.4	10	26.4	+35.2	67.7	24				
25	8	12.9	+29.4	65.8	8	37.5	+30.1	65.9	9	01.9	+31.0	66.1	9	26.1	+31.8	66.2	9	50.2	+32.7	66.4	10	14.1	+33.5	66.6	10	37.9	+34.3	66.7	11				
26	8	42.3	+29.2	64.9	9	07.6	+30.1	65.1	9	32.9	+30.8	65.2	9	57.9	+31.7	65.4	10	22.9	+32.5	65.5	10	47.6	+33.3	65.7	11	36.6	+35.0	66.1	26				
27	9	11.5	+29.1	64.0	9	37.7	+29.9	64.2	10	03.7	+30.8	64.4	10	29.6	+31.6	64.5	10	55.4	+32.4	64.7	11	20.9	+33.2	64.9	11	46.3	+34.0	65.1	27				
28	9	40.6	+29.0	63.2	10	07.6	+29.8	63.3	10	34.5	+30.6	63.5	11	01.2	+31.4	63.7	11	27.8	+32.2	63.8	11	54.1	+33.1	64.0	12	20.3	+33.9	64.2	28				
29	10	09.6	+28.8	62.3	10	37.4	+29.6	62.4	11	05.1	+30.5	62.6	11	32.6	+31.3	62.8	12	00.0	+32.0	63.0	12	27.2	+32.8	63.2	12	54.2	+33.6	63.4	13				
30	10	38.4	+28.6	61.4	11	07.0	+29.5	61.5	11	35.6	+30.2	61.7	12	03.9	+31.1	61.9	12	32.0	+32.0	62.1	13	00.0	+32.7	62.3	13	27.8	+33.5	62.5	13				
31	11	07.0	+28.6	60.5	11	36.5	+29.3	60.7	12	05.8	+30.2	60.8	12	35.0	+30.9	61.0	13	04.0	+31.7	61.2	13	32.7	+32.6	61.4	14	29.7	+34.1	61.9	31				
32	11	35.6	+28.3	59.6	12	05.8	+29.2	59.8	12	36.0	+29.9	60.0	13	05.9	+30.8	60.2	13	35.7	+31.5	60.4	14	05.3	+32.3	60.6	14	34.6	+33.1	60.8	15				
33	12	03.9	+28.1	58.7	12	35.0	+29.0	58.9	13	05.9	+29.8	59.1	13	36.7	+30.5	59.3	14	07.2	+31.4	59.5	14	37.6	+32.1	59.7	15	07.7	+33.0	59.9	15				
34	12	32.0	+28.0	57.8	13	04.0	+28.7	58.0	13	35.7	+29.6	58.2	14	07.2	+30.4	58.4	14	38.6	+31.0	58.5	15	09.7	+32.0	58.8	15	40.7	+32.7	59.1	34				
35	13	00.0	+27.8	56.9	13	32.7	+28.6	57.1	14	05.3	+29.3	57.3	14	37.6	+30.1	57.5	15	09.7	+31.0	57.7	15	41.7	+31.7	58.0	16	13.4	+32.5	58.2	16				
36	13	27.8	+27.6	56.0	14	01.3	+28.4	56.2	14	34.6	+29.2	56.4	15	07.7	+30.0	56.6	15	40.7	+30.7	56.8	16	13.4	+31.5	57.1	16	45.9	+32.3	57.3	17				
37	13	55.4	+27.4	55.1	14	29.7	+28.2	55.3	15	03.8	+28.9	55.5	15	37.7	+29.7	55.7	16	11.4	+30.5	55.9	16	44.9	+31.3	56.4	17	51.2	+32.9	56.7	17				
38	14																																

86°, 274° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	3 27.8 +30.0	92.0	3 25.7 +30.9	92.1	3 23.5 +31.8	92.1	3 21.2 +32.7	92.2	3 18.9 +33.6	92.2	3 16.5 +34.5	92.3	3 14.1 +35.3	92.4	3 11.6 +36.2	92.4	3 11.6 +36.2	92.4	3 11.6 +36.2	92.4	3 11.6 +36.2	92.4	3 11.6 +36.2	92.4	0
1	3 57.8 +30.0	91.1	3 56.6 +30.9	91.2	3 55.3 +31.8	91.3	3 53.9 +32.7	91.3	3 52.5 +33.5	91.4	3 51.0 +34.4	91.5	3 49.4 +35.3	91.5	3 47.8 +36.1	91.6	3 47.8 +36.1	91.6	3 47.8 +36.1	91.6	3 47.8 +36.1	91.6	3 47.8 +36.1	91.6	1
2	4 27.8 +29.9	90.3	4 27.5 +30.8	90.3	4 27.1 +31.7	90.4	4 26.6 +32.6	90.5	4 26.0 +33.5	90.6	4 25.4 +34.3	90.7	4 24.7 +35.2	90.7	4 23.9 +36.0	90.8	4 23.9 +36.0	90.8	4 23.9 +36.0	90.8	4 23.9 +36.0	90.8	4 23.9 +36.0	90.8	2
3	4 57.7 +29.9	89.4	4 58.3 +30.8	89.5	4 58.8 +31.7	89.6	4 59.2 +32.5	89.7	4 59.5 +33.4	89.7	4 59.7 +34.3	89.8	4 59.9 +35.1	89.9	4 59.9 +36.0	90.0	4 59.9 +36.0	90.0	4 59.9 +36.0	90.0	4 59.9 +36.0	90.0	4 59.9 +36.0	90.0	3
4	5 27.6 +29.7	88.5	5 29.1 +30.6	88.6	5 30.5 +31.5	88.7	5 31.7 +32.5	88.8	5 32.9 +33.4	88.9	5 34.0 +34.2	89.0	5 35.0 +35.1	89.1	5 35.9 +35.9	89.2	5 35.9 +35.9	89.2	5 35.9 +35.9	89.2	5 35.9 +35.9	89.2	5 35.9 +35.9	89.2	4
5	5 57.3 +29.7	87.7	5 59.7 +30.6	87.8	6 0.2 +31.5	87.9	6 0.4 +32.4	88.0	6 0.6 +33.3	88.1	6 0.8 +34.2	88.2	6 10.1 +35.0	88.3	6 11.8 +35.9	88.4	6 11.8 +35.9	88.4	6 11.8 +35.9	88.4	6 11.8 +35.9	88.4	6 11.8 +35.9	88.4	5
6	6 27.0 +29.6	86.8	6 30.3 +30.5	86.9	6 33.5 +31.4	87.0	6 36.6 +32.3	87.1	6 39.6 +33.1	87.2	6 42.4 +34.0	87.4	6 45.1 +34.9	87.5	6 47.7 +35.8	87.6	6 47.7 +35.8	87.6	6 47.7 +35.8	87.6	6 47.7 +35.8	87.6	6 47.7 +35.8	87.6	6
7	6 56.6 +29.5	85.9	7 00.8 +30.5	86.0	7 04.9 +31.4	86.1	7 08.9 +32.2	86.3	7 12.7 +33.1	86.4	7 16.4 +34.0	86.5	7 20.0 +34.8	86.7	7 23.5 +35.6	86.8	7 23.5 +35.6	86.8	7 23.5 +35.6	86.8	7 23.5 +35.6	86.8	7 23.5 +35.6	86.8	7
8	7 26.1 +29.4	85.0	7 31.3 +30.3	85.2	7 36.3 +31.2	85.3	7 41.1 +32.1	85.4	7 45.8 +33.0	85.6	7 50.4 +33.9	85.7	7 54.8 +34.8	85.8	7 59.1 +35.6	86.0	7 59.1 +35.6	86.0	7 59.1 +35.6	86.0	7 59.1 +35.6	86.0	7 59.1 +35.6	86.0	8
9	7 55.5 +29.3	84.1	8 01.6 +30.2	84.3	8 07.5 +31.1	84.4	8 13.2 +32.0	84.6	8 18.8 +32.9	84.7	8 24.3 +33.7	84.9	8 29.6 +34.6	85.0	8 34.7 +35.5	85.2	8 34.7 +35.5	85.2	8 34.7 +35.5	85.2	8 34.7 +35.5	85.2	8 34.7 +35.5	85.2	9
10	8 24.8 +29.2	83.3	8 31.8 +30.1	83.4	8 38.6 +31.0	83.6	8 45.2 +31.9	83.7	8 51.7 +32.8	83.9	8 58.0 +33.7	84.0	9 04.2 +34.5	84.2	9 10.2 +35.4	84.3	9 10.2 +35.4	84.3	9 10.2 +35.4	84.3	9 10.2 +35.4	84.3	9 10.2 +35.4	84.3	10
11	9 54.0 +29.0	82.4	9 01.9 +29.9	82.5	9 09.6 +30.8	82.7	9 17.1 +31.8	82.9	9 24.5 +32.6	83.0	9 31.7 +33.5	83.2	9 38.7 +34.4	83.4	9 45.6 +35.2	83.5	9 45.6 +35.2	83.5	9 45.6 +35.2	83.5	9 45.6 +35.2	83.5	9 45.6 +35.2	83.5	11
12	9 23.0 +28.9	81.5	9 31.8 +29.8	81.7	9 40.4 +30.8	81.8	9 48.9 +31.6	82.0	9 57.1 +32.6	82.2	10 05.2 +33.4	82.3	10 13.1 +34.3	82.5	10 20.8 +35.2	82.7	10 20.8 +35.2	82.7	10 20.8 +35.2	82.7	10 20.8 +35.2	82.7	10 20.8 +35.2	82.7	12
13	9 51.9 +28.8	80.6	10 01.6 +29.7	80.8	10 11.2 +30.6	81.0	10 20.5 +31.5	81.1	10 29.7 +32.3	81.3	10 38.6 +33.3	81.5	10 47.4 +34.1	81.7	10 56.0 +35.0	81.9	10 56.0 +35.0	81.9	10 56.0 +35.0	81.9	10 56.0 +35.0	81.9	10 56.0 +35.0	81.9	13
14	10 20.7 +28.6	79.7	10 31.3 +29.6	79.9	10 41.8 +30.4	80.1	10 52.0 +31.4	80.3	11 02.0 +32.3	80.5	11 11.9 +33.1	80.7	11 21.5 +34.0	80.8	11 31.0 +34.8	81.0	11 31.0 +34.8	81.0	11 31.0 +34.8	81.0	11 31.0 +34.8	81.0	11 31.0 +34.8	81.0	14
15	10 49.3 +28.5	78.8	11 00.9 +29.4	79.0	11 12.2 +30.3	79.2	11 23.4 +31.1	79.4	11 34.3 +32.1	79.6	11 45.0 +33.0	79.8	11 55.5 +33.9	80.0	12 05.8 +34.7	80.2	12 05.8 +34.7	80.2	12 05.8 +34.7	80.2	12 05.8 +34.7	80.2	12 05.8 +34.7	80.2	15
16	11 17.8 +28.3	77.9	11 30.3 +29.2	78.1	11 42.5 +30.1	78.3	11 54.5 +31.1	78.5	12 06.4 +31.9	78.7	12 18.0 +32.8	78.9	12 29.4 +33.7	79.2	12 40.5 +34.6	79.4	12 40.5 +34.6	79.4	12 40.5 +34.6	79.4	12 40.5 +34.6	79.4	12 40.5 +34.6	79.4	16
17	11 46.1 +28.1	77.0	11 59.5 +29.0	77.2	12 12.6 +30.0	77.4	12 25.6 +30.8	77.7	12 38.3 +31.8	77.9	12 50.8 +32.6	78.1	13 03.1 +33.5	78.3	13 15.1 +34.4	78.5	13 15.1 +34.4	78.5	13 15.1 +34.4	78.5	13 15.1 +34.4	78.5	13 15.1 +34.4	78.5	17
18	12 14.2 +28.0	76.1	12 28.5 +28.9	76.3	12 42.6 +29.8	76.5	12 56.4 +30.7	76.8	13 10.1 +31.5	77.0	13 23.4 +32.5	77.2	13 36.6 +33.3	77.5	13 49.5 +34.2	77.7	13 49.5 +34.2	77.7	13 49.5 +34.2	77.7	13 49.5 +34.2	77.7	13 49.5 +34.2	77.7	18
19	12 42.2 +27.8	75.2	12 57.4 +28.7	75.4	13 12.4 +29.6	75.7	13 27.1 +30.5	75.9	13 41.6 +31.4	76.1	13 55.9 +32.3	76.4	14 09.9 +33.2	76.6	14 23.7 +34.0	76.9	14 37.0 +34.8	77.1	14 51.3 +35.6	77.3	14 51.3 +35.6	77.3	14 51.3 +35.6	77.3	19
20	13 10.0 +27.6	74.3	13 26.1 +28.5	74.5	13 42.0 +29.4	74.8	13 57.6 +30.3	75.0	14 13.0 +31.2	75.2	14 28.2 +32.1	75.5	14 43.1 +33.0	75.7	14 57.7 +33.9	76.0	14 57.7 +33.9	76.0	14 57.7 +33.9	76.0	14 57.7 +33.9	76.0	14 57.7 +33.9	76.0	20
21	13 37.6 +27.3	73.4	13 54.6 +28.3	73.6	14 11.4 +29.2	73.9	14 27.9 +30.1	74.1	14 44.2 +31.0	74.4	15 00.3 +31.9	74.6	15 16.1 +32.7	74.9	15 31.6 +33.6	75.1	15 31.6 +33.6	75.1	15 31.6 +33.6	75.1	15 31.6 +33.6	75.1	15 31.6 +33.6	75.1	21
22	14 04.9 +27.2	72.5	14 22.9 +28.1	72.7	14 40.6 +29.0	73.0	14 58.0 +29.9	73.2	15 15.2 +30.8	73.5	15 32.2 +31.6	73.7	15 48.8 +32.6	74.0	16 05.2 +33.5	74.3	16 05.2 +33.5	74.3	16 05.2 +33.5	74.3	16 05.2 +33.5	74.3	16 05.2 +33.5	74.3	22
23	14 32.1 +27.0	71.6	14 51.0 +27.8	71.8	15 09.6 +28.8	72.1	15 27.9 +29.7	72.3	15 46.0 +30.6	72.6	16 03.8 +31.5	72.9	16 21.4 +32.3	73.1	16 38.7 +33.2	73.4	16 38.7 +33.2	73.4	16 38.7 +33.2	73.4	16 38.7 +33.2	73.4	16 38.7 +33.2	73.4	23
24	14 59.1 +26.7	70.6	15 18.8 +27.7	70.9	15 38.4 +28.5	71.1	15 57.6 +29.5	71.4	16 15.0 +30.4	71.7	16 35.0 +31.2	72.0	17 06.5 +31.0	72.1	17 25.9 +31.8	72.4	17 44.9 +32.7	72.7	17 44.9 +32.7	72.7	17 44.9 +32.7	72.7	17 44.9 +32.7	72.7	25
25	15 25.8 +26.5	69.7	15 46.5 +27.4	70.0	16 06.9 +28.3	70.2	16 27.1 +29.2	70.5	16 46.9 +30.2	70.8	17 06.5 +31.0	71.1	17 25.9 +31.8	71.4	17 44.9 +32.7	71.7	17 44.9 +32.7	71.7	17 44.9 +32.7	71.7	17 44.9 +32.7	71.7	17 44.9 +32.7	71.7	25
26	15 52.3 +26.3	68.8	16 13.9 +27.2	69.0	16 35.2 +28.1	69.3	16 56.3 +28.9	69.6	17 35.7 +29.8	69.9	17 37.5 +30.8	70.2	17 57.7 +31.7	70.5	18 17.6 +32.5	70.8	18 17.6 +32.5	70.8	18 17.6 +32.5	70.8	18 17.6 +32.5	70.8	18 17.6 +32.5	70.8	26
27	16 18.6 +26.0	67.8	16 41.1 +26.9	68.1	17 03.3 +27.8	68.4	17 25.2 +28.8	68.7	17 46.9 +29.6	69.0	18 08.3 +30.5	69.3	18 29.4 +31.4	69.6	18 50.1 +32.3	69.9	18 50.1 +32.3	69.9	18 50.1 +32.3	69.9	18 50.1 +32.3	69.9	18 50.1 +32.3	69.9	27
28	16 44.6 +25.7	66.9	17 08.0 +26.6	67.2	17 31.1 +27.6	67.5	17 54.0 +28.4	67.8	18 16.5 +29.4	68.1	18 38.8 +30.2	68.4	19 00.8 +31.1	68.7	19 22.4 +32.0	68.9	19 22.4 +32.0	68.9	19 22.4 +32.0	68.9	19 22.4 +32.0	68.9	19 22.4 +32.0	68.9	28
29	17 39.0 +23.7	60.2	20 08.7 +24.6	60.5	21 38.1 +25.5	60.8	21 07.2 +26.3	61.2	21 36.0 +27.2	61.5	21 04.4 +28.1	61.9	22 32.5 +29.1	62.2	23 00.3 +29.9	62.6	23 00.3 +29.9	62.6	23 00.3 +29.9	62.6	23 00.3 +29.9	62.6			

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 86°, 274°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	3	27.8	-30.1	92.0	3	25.7	-31.0	92.1	3	23.5	-31.9	92.1	3	21.2	-32.7	92.2	3	18.9	-33.6	92.2	3	16.5	-34.4	92.3	3	14.1	-35.3	92.4	3	11.6	-36.2	92.4	0
1	2	57.7	-30.1	92.9	2	54.7	-31.0	92.9	2	51.6	-31.9	93.0	2	48.5	-32.8	93.0	2	45.3	-33.7	93.1	2	42.1	-34.6	93.1	2	38.8	-35.4	93.2	2	35.4	-36.2	93.2	1
2	2	27.6	-30.1	93.7	2	23.7	-31.1	93.8	2	19.7	-31.9	93.8	2	15.7	-32.8	93.9	2	11.6	-33.7	93.9	2	07.5	-34.5	93.9	2	03.4	-35.4	94.0	1	59.2	-36.2	94.0	2
3	1	57.5	-30.2	94.6	1	52.6	-31.0	94.6	1	47.8	-32.0	94.7	1	42.9	-32.9	94.7	1	37.9	-33.7	94.7	1	33.0	-34.6	94.8	1	28.0	-35.4	94.8	1	23.0	-36.3	94.8	3
4	1	27.3	-30.2	95.5	1	21.6	-31.1	95.5	1	15.8	-32.0	95.5	1	10.0	-32.8	95.5	1	04.2	-33.7	95.6	0	58.4	-34.6	95.6	0	52.6	-35.4	95.6	0	46.7	-36.2	95.6	4
5	0	57.1	-30.2	96.3	0	50.5	-31.1	96.3	0	43.8	-32.0	96.4	0	37.2	-32.9	96.4	0	30.5	-33.7	96.4	0	23.8	-34.5	96.4	0	17.2	-35.5	96.4	0	10.5	-36.3	96.4	5
6	0	26.9	-30.2	97.2	0	19.4	-31.2	97.2	0	11.8	-32.0	97.2	0	04.3	-32.9	97.2	0	03.2	+33.8	82.8	0	10.7	+34.6	82.8	0	18.3	+35.4	82.8	0	25.8	+36.2	82.8	6
7	0	03.3	+30.3	81.9	0	11.8	+31.1	81.9	0	20.2	+32.0	81.9	0	28.6	+32.8	82.0	0	37.0	+33.7	82.0	0	45.3	+34.6	82.0	0	53.7	+35.4	82.0	1	02.0	+36.3	82.0	7
8	0	33.6	+30.2	81.1	0	42.9	+31.1	81.1	0	52.2	+31.9	81.1	1	01.4	+32.9	81.1	1	10.7	+33.7	81.1	1	19.9	+34.6	81.2	1	38.3	+36.2	81.2	8				
9	1	03.8	+30.2	80.2	1	14.0	+31.0	80.2	1	24.1	+32.0	80.3	1	34.3	+32.8	80.3	1	44.4	+33.7	80.3	1	54.5	+34.5	80.3	2	04.5	+35.4	80.4	9				
10	1	34.0	+30.1	79.4	1	45.0	+31.1	79.4	1	56.1	+31.9	79.4	2	07.1	+32.8	79.4	2	18.1	+33.6	79.5	2	29.0	+34.5	79.5	2	39.9	+35.3	79.6	2	50.7	+36.2	79.6	10
11	2	04.1	+30.2	78.5	2	16.1	+31.0	78.5	2	28.0	+31.9	78.6	2	39.9	+32.8	78.6	2	51.7	+33.6	78.7	3	03.5	+34.5	78.7	3	26.9	+36.1	78.8	11				
12	2	34.3	+30.1	77.6	2	47.1	+31.0	77.7	2	59.9	+31.9	77.7	3	12.7	+32.7	77.8	3	25.3	+33.6	77.8	3	38.0	+34.4	77.9	4	03.0	+36.1	78.0	12				
13	3	04.4	+30.1	76.8	3	18.1	+31.0	76.8	3	31.8	+31.8	76.9	3	45.4	+32.7	76.9	3	58.9	+33.5	77.0	4	12.4	+34.4	77.1	4	25.8	+35.2	77.1	13				
14	3	34.5	+30.0	75.9	3	49.1	+30.9	76.0	4	03.6	+31.8	76.0	4	18.1	+32.6	76.1	4	32.4	+33.5	76.2	5	01.0	+35.1	76.3	5	15.1	+36.0	76.4	14				
15	4	04.5	+29.9	75.0	4	20.0	+30.8	75.1	4	35.4	+31.7	75.2	4	50.7	+32.5	75.2	5	05.9	+33.4	75.3	5	21.1	+34.2	75.4	5	36.1	+35.1	75.5	5	51.1	+35.9	75.6	15
16	4	34.4	+29.9	74.2	4	50.8	+30.8	74.2	5	07.1	+31.6	74.3	5	23.2	+32.5	74.4	5	39.3	+33.4	74.5	5	55.3	+34.2	74.6	6	11.2	+35.0	74.7	6	27.0	+35.8	74.8	16
17	5	04.3	+29.9	73.3	5	21.6	+30.7	73.4	5	38.7	+31.5	73.5	5	55.7	+32.4	73.6	6	12.7	+33.2	73.7	6	29.5	+34.1	73.8	6	46.2	+34.9	73.9	7	02.8	+35.7	74.0	17
18	5	34.2	+29.7	72.4	5	52.3	+30.6	72.5	6	10.2	+31.5	72.6	6	28.1	+32.4	72.7	6	45.9	+33.2	72.8	7	03.6	+34.0	72.9	7	21.1	+34.8	73.1	7	38.5	+35.7	73.2	18
19	6	03.9	+29.7	71.5	6	22.9	+30.5	71.6	6	41.7	+31.4	71.7	7	00.5	+32.2	71.9	7	19.1	+33.1	72.0	7	37.6	+33.9	72.1	7	55.9	+34.8	72.2	8	14.2	+35.5	72.4	19
20	6	33.6	+29.6	70.7	6	53.4	+30.4	70.8	7	13.1	+31.3	70.9	7	32.7	+32.1	71.0	7	52.2	+32.9	71.1	8	11.5	+33.8	71.3	8	30.7	+34.6	71.4	8	49.7	+35.5	71.6	20
21	7	03.2	+29.5	69.8	7	23.8	+30.4	69.9	7	44.4	+31.2	70.0	8	04.8	+32.1	70.2	8	25.1	+32.9	70.3	8	45.3	+33.7	70.4	9	05.3	+34.5	70.6	9	25.2	+35.3	70.7	21
22	7	32.7	+29.3	68.9	7	54.2	+30.2	69.0	8	15.6	+31.1	69.2	8	36.9	+31.9	69.3	8	58.0	+32.7	69.5	9	19.0	+33.6	69.6	9	39.8	+34.4	69.8	10	00.5	+35.2	69.9	22
23	8	02.0	+29.3	68.0	8	24.4	+30.1	68.2	8	46.7	+30.9	68.3	9	08.8	+31.8	68.4	9	30.7	+32.7	68.6	9	52.6	+33.4	68.8	10	14.2	+34.3	68.9	10	35.7	+35.1	69.1	23
24	8	31.3	+29.1	67.1	8	54.5	+30.0	67.3	9	17.6	+30.9	67.4	9	40.6	+31.6	67.6	10	03.4	+32.5	67.7	10	26.0	+33.3	67.9	10	48.5	+34.1	68.1	11	10.8	+34.9	68.3	24
25	9	00.4	+29.0	66.3	9	24.5	+29.9	66.4	9	48.5	+30.7	66.6	10	12.2	+31.6	66.7	10	35.9	+32.3	66.9	10	59.3	+33.2	67.1	11	22.6	+34.0	67.3	11	45.7	+34.8	67.4	25
26	9	29.4	+28.9	65.4	9	54.4	+29.7	65.5	10	19.2	+30.5	65.7	10	43.8	+31.4	65.9	11	08.2	+32.2	66.0	11	32.5	+33.0	66.2	11	56.6	+33.8	66.4	12	20.5	+34.7	66.6	26
27	9	58.3	+28.8	64.5	10	24.1	+29.6	64.6	10	49.7	+30.4	64.8	11	15.2	+31.2	65.0	11	40.4	+32.1	65.2	12	05.5	+32.9	65.4	12	30.4	+33.7	65.6	12	55.2	+34.4	65.8	27
28	10	27.1	+28.6	63.6	10	53.7	+29.4	63.8	11	20.1	+30.3	63.9	11	46.4	+31.1	64.1	12	12.5	+31.9	64.3	12	38.4	+32.7	64.5	13	04.1	+33.5	64.7	13	29.6	+34.4	64.9	28
29	10	55.7	+28.4	62.7	11	23.1	+29.3	62.9	11	50.4	+30.1	63.1	12	17.5	+30.9	63.2	12	44.4	+31.7	63.4	13	11.1	+32.5	63.7	13	37.6	+33.4	63.9	14	04.0	+34.1	64.1	29
30	11	24.1	+28.3	61.8	11	52.4	+29.1	62.0	12	20.5	+29.9	62.2	12	48.4	+30.7	62.4	13	16.1	+31.6	62.6	13	43.6	+32.4	62.8	14	11.0	+33.1	63.0	14	38.1	+34.0	63.2	30
31	11	52.4	+28.1	60.9	12	21.5	+28.9	61.1	12	50.4	+29.7	61.3	13	19.1	+30.6	61.5	13	47.7	+31.3	61.7	14	16.0	+32.2	61.9	14	44.1	+33.0	62.1	15	12.1	+33.7	62.4	31
32	12	20.5	+27.9	60.0	12	50.4	+28.7	60.2	13	20.1	+29.6	60.4	13	49.7	+30.3	60.6	14	19.0	+31.2	60.8	14	48.2	+31.9	61.0	15	17.1	+32.8	61.3	15	45.8	+33.6	61.5	32
33	12	48.4	+27.7	59.1	13	19.1	+28.6	59.3	13	49.7	+29.3	59.5	14	20.0	+30.2	59.7	14	50.2	+30.9	59.9	15	20.1	+31.8	60.2	15	49.9	+32.5	60.4	16	19.4	+33.3	60.7	33
34	13	16.1	+27.5	58.2	13	47.7	+28.3	58.4	14	19.6	+28.1	58.6	15	21.1	+28.9	58.8	15	21.1	+30.8	59.1	15	51.9	+31.5	59.3	16	52.7	+33.1	59.8	34				
35	13	43.6	+27.4	57.3	14	16.0	+28.1</																										

87°, 273° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	2 35.9 +30.0	91.5	2 34.3 +30.9	91.5	2 32.6 +31.8	91.6	2 30.9 +32.7	91.6	2 29.2 +33.6	91.7	2 27.4 +34.5	91.7	2 25.6 +35.3	91.8	2 23.7 +36.2	91.8	2 21.6 +35.0	87.7	5 23.9 +35.9	87.8	5	0			
1	3 05.9 +29.9	90.6	3 05.2 +30.9	90.7	3 04.4 +31.8	90.7	3 03.6 +32.7	90.8	3 02.8 +33.5	90.8	3 01.9 +34.3	90.9	3 00.9 +35.2	91.0	2 59.9 +36.0	91.0	1	1							
2	3 35.8 +30.0	89.8	3 36.1 +30.8	89.8	3 36.2 +31.7	89.9	3 36.3 +32.6	90.0	3 36.3 +33.5	90.0	3 36.2 +34.4	90.1	3 36.1 +35.2	90.1	3 35.9 +36.1	90.2	2	2							
3	4 05.8 +29.8	88.9	4 06.9 +30.8	89.0	4 07.9 +31.7	89.0	4 08.9 +32.5	89.1	4 09.8 +33.4	89.2	4 10.6 +34.3	89.3	4 11.3 +35.2	89.3	4 12.0 +36.0	89.4	3	3							
4	4 35.6 +29.8	88.0	4 37.7 +30.7	88.1	4 39.6 +31.6	88.2	4 41.4 +32.5	88.3	4 43.2 +33.4	88.4	4 44.9 +34.2	88.4	4 46.5 +35.1	88.5	4 48.0 +35.9	88.6	4	4							
5	5 05.4 +29.8	87.2	5 08.4 +30.6	87.2	5 11.2 +31.5	87.3	5 13.9 +32.5	87.4	5 16.6 +33.3	87.5	5 19.1 +34.2	87.6	5 21.6 +35.0	87.7	5 23.9 +35.9	87.8	5	5							
6	5 35.2 +29.6	86.3	5 39.0 +30.6	86.4	5 42.7 +31.5	86.5	5 46.4 +32.3	86.6	5 49.9 +33.2	86.7	5 53.3 +34.1	86.8	5 56.6 +35.0	86.9	5 59.8 +35.8	87.0	6	6							
7	6 04.8 +29.6	85.4	6 09.6 +30.4	85.5	6 14.2 +31.4	85.6	6 18.7 +32.3	85.7	6 23.1 +33.2	85.8	6 27.4 +34.0	86.0	6 31.6 +34.9	86.1	6 35.6 +35.8	86.2	7	7							
8	6 34.4 +29.5	84.5	6 40.0 +30.4	84.7	6 45.6 +31.3	84.8	6 51.0 +32.2	84.9	6 56.3 +33.0	85.0	7 01.4 +34.0	85.1	7 06.5 +34.7	85.3	7 11.4 +35.6	85.4	8	8							
9	7 03.9 +29.3	83.7	7 10.4 +30.3	83.8	7 16.9 +31.1	83.9	7 23.2 +32.0	84.0	7 29.3 +33.0	84.2	7 35.4 +33.8	84.3	7 41.2 +34.7	84.4	7 47.0 +35.6	84.6	9	9							
10	7 33.2 +29.3	82.8	7 40.7 +30.2	82.9	7 48.0 +31.1	83.0	7 55.2 +32.0	83.2	8 02.3 +32.8	83.3	8 09.2 +33.7	83.5	8 15.9 +34.6	83.6	8 22.6 +35.4	83.8	10	10							
11	8 02.5 +29.2	81.9	8 10.9 +30.1	82.0	8 19.1 +31.0	82.2	8 27.2 +31.9	82.3	8 35.1 +32.8	82.5	8 42.9 +33.6	82.6	8 50.5 +34.5	82.8	8 58.0 +35.3	82.9	11	11							
12	8 31.7 +29.0	81.0	8 41.0 +29.9	81.2	8 50.1 +30.9	81.3	8 59.1 +31.7	81.5	9 07.9 +32.6	81.6	9 16.5 +33.6	81.8	9 25.0 +34.4	82.0	9 33.3 +35.3	82.1	12	12							
13	9 00.7 +28.9	80.1	9 10.9 +28.9	80.3	9 21.0 +30.7	80.4	9 30.8 +31.6	80.6	9 40.5 +32.5	80.8	9 50.1 +33.3	80.9	9 59.4 +34.3	81.1	10 08.6 +35.1	81.3	13	13							
14	9 29.6 +28.8	79.2	9 40.7 +29.7	79.4	9 51.7 +30.6	79.6	10 02.4 +31.5	79.7	10 13.0 +32.4	79.9	10 23.4 +33.3	80.1	10 33.7 +34.1	80.3	10 43.7 +35.0	80.5	14	14							
15	9 58.4 +28.6	78.4	10 10.4 +29.6	78.5	10 22.3 +30.4	78.7	10 33.9 +31.4	78.9	10 45.4 +32.2	79.1	10 56.7 +33.1	79.3	11 07.8 +33.9	79.4	11 18.7 +34.8	79.6	15	15							
16	10 27.0 +28.5	77.5	10 40.0 +29.4	77.6	10 52.7 +30.3	77.8	11 05.3 +31.2	78.0	11 17.6 +32.1	78.2	11 29.8 +33.0	78.4	11 41.7 +33.9	78.6	11 53.5 +34.7	78.8	16	16							
17	10 55.5 +28.3	76.6	11 09.4 +29.2	76.8	11 23.0 +30.2	76.9	11 36.5 +31.0	77.1	11 49.7 +31.9	77.3	12 02.8 +32.8	77.6	12 15.6 +33.7	77.8	12 28.2 +34.5	78.0	17	17							
18	11 23.8 +28.2	75.7	11 38.6 +29.1	75.9	11 53.2 +29.9	76.1	12 07.5 +30.9	76.3	12 21.6 +31.8	76.5	12 35.6 +32.6	76.7	12 49.3 +33.5	76.9	13 02.7 +34.4	77.1	18	18							
19	11 52.0 +28.0	74.8	12 07.7 +28.9	75.0	12 23.1 +29.8	75.2	12 38.4 +30.7	75.4	12 53.4 +31.6	75.6	13 08.2 +32.5	75.8	13 22.8 +33.3	76.1	13 37.1 +34.2	76.3	19	19							
20	12 20.0 +27.8	73.9	12 36.6 +28.7	74.1	12 52.9 +29.7	74.3	13 09.1 +30.5	74.5	13 25.0 +31.4	74.7	13 40.7 +32.2	75.0	13 56.1 +33.2	75.2	14 11.3 +34.0	75.5	20	20							
21	12 47.8 +27.6	72.9	13 05.3 +28.5	73.2	13 22.6 +29.4	73.4	13 39.6 +30.3	73.6	13 56.4 +31.2	73.9	14 12.9 +32.1	74.1	14 29.3 +32.9	74.3	14 45.3 +33.9	74.6	21	21							
22	13 15.4 +27.5	72.0	13 33.8 +28.4	72.3	13 52.0 +29.2	72.5	14 09.9 +30.2	72.7	14 27.6 +31.0	73.0	14 45.0 +31.9	73.2	15 02.2 +32.8	73.5	15 19.2 +33.6	73.7	22	22							
23	13 42.9 +27.2	71.1	14 02.2 +28.1	71.4	14 21.2 +29.1	71.6	14 40.1 +29.9	71.8	14 58.6 +30.8	72.1	15 16.9 +31.7	72.4	15 35.0 +32.6	72.6	15 52.8 +33.4	72.9	23	23							
24	14 10.1 +27.0	70.2	14 30.3 +27.9	70.4	14 50.3 +28.8	70.7	15 10.0 +29.7	70.9	15 29.4 +30.6	71.2	15 48.6 +31.5	71.5	16 07.6 +32.3	71.7	16 26.2 +33.3	72.0	24	24							
25	14 37.1 +26.8	69.3	14 58.2 +27.7	69.5	15 19.1 +28.6	69.8	15 39.7 +29.5	70.0	16 00.0 +30.4	70.3	16 20.1 +31.3	70.6	16 39.9 +32.2	70.9	16 59.5 +33.0	71.2	25	25							
26	15 03.9 +26.6	68.4	15 25.9 +27.5	68.6	15 47.7 +28.4	68.9	16 09.2 +29.2	69.1	16 30.4 +30.2	69.4	16 51.4 +31.0	69.7	17 12.1 +31.9	70.0	17 32.5 +32.7	70.3	26	26							
27	15 30.5 +26.3	67.4	15 53.4 +27.2	67.7	16 16.1 +28.1	68.0	16 38.4 +29.1	68.2	17 00.6 +29.9	68.5	17 22.4 +30.8	68.8	17 44.0 +31.6	69.1	18 05.2 +32.5	69.4	27	27							
28	15 56.8 +26.1	66.5	16 20.6 +27.0	66.8	16 44.2 +27.9	67.0	17 07.5 +28.7	67.3	17 30.5 +29.6	67.6	17 53.2 +30.5	67.9	18 15.6 +31.4	68.2	18 37.7 +32.5	68.5	28	28							
29	16 22.9 +25.8	65.6	16 47.6 +26.8	65.8	17 12.1 +27.6	66.1	17 36.2 +28.6	66.4	18 00.1 +29.4	66.7	18 23.7 +30.3	67.0	18 47.0 +31.2	67.3	19 10.0 +32.0	67.6	29	29							
30	16 48.8 +25.6	64.6	17 14.4 +26.5	64.9	17 39.7 +27.4	65.2	18 04.8 +28.2	65.5	18 29.5 +29.1	65.8	18 54.0 +30.0	66.1	19 18.2 +30.8	66.4	19 42.0 +31.8	66.7	30	30							
31	17 14.4 +25.3	63.7	17 40.9 +26.2	64.0	18 07.1 +27.1	64.2	18 33.0 +28.0	64.5	18 58.6 +28.9	64.8	19 24.0 +29.7	65.2	19 49.0 +30.6	65.5	20 13.8 +31.5	65.8	31	31							
32	17 39.7 +25.1	62.7	18 07.1 +25.9	63.0	18 34.2 +26.8	63.3	19 01.0 +27.7	63.6	19 27.5 +28.6	63.9	19 53.7 +29.5	64.2	20 19.6 +30.4	64.6	20 45.3 +31.1	64.9	32	32							
33	18 04.8 +24.7	61.8	18 33.0 +25.6	62.1	19 01.0 +26.5	62.4	19 28.7 +27.4	62.7	19 56.1 +28.2	63.0	20 23.2 +29.1	63.3	20 50.0 +30.0	63.7	21 16.4 +30.9	64.0	33	33							
34	18 29.5 +24.5	60.8	18 58.6 +25.4	61.1	19 27.5 +26.2	61.4	19 56.1 +27.1	61.7	20 24.3 +28.0	62.0	20 52.3 +28.5	62.4	21 20.0 +29.7	62.7	21 47.3 +30.6	63.1	34	34							
35	18 54.0 +24.2	59.8	19 24.0 +25.0	60.1	19 53.7 +25.9	60.5	20 23.2 +26.8	60.8	20 52.3 +27.7	61.1	21 21.2 +28.5	61.4	21 49.7 +29.4	61.8	22 17.9 +30.2	62.1	35	35							
36	19 18.2 +23.8	58.9	19 49.0 +24.8	59.2	20 19.6 +25.7	59.5	20 50.0 +26.4	59.8	21 20.0 +27.3	60.2	21 49.7 +28.2	60.5	22 19.1 +29.0	60.8	22 48.1 +30.0	61.2	36	36							
37	19 42.0 +23.6	57.9	20 13.8 +24.4	58.2	20 45.3 +25.2	58.5	21 16.4 +26.2	58.9	21 47.3 +27.9	59.2	22 17.9 +28.8	59.5	22 48.1 +28.8	59.9	23 18.1 +29.5	60.3	37	37							
38	20 05.6 +23.2	56.9	20 38.2 +24.1	57.2	21 10.5 +25.0	57.6	21 42.6 +25.8	57.9	22 14.3 +26.7	58.2	22 45.7 +27.6	58.6	23 16.9 +28.3	58.9	23 47.6 +29.3	59.3	38	38							
39	20 28.8 +22.9	55.9	21 02.3 +23.7	56.3	21 35.5 +24.6	56.6	22 08.4 +25.4	56.9	22 41.0 +26.3	57.3	23 13.3 +27.1	57.6	23 45.2 +28.1	58.0	24 16.9 +28.9	58.4	39	39							
40	20 51.7 +22.6	55.0	21 26.0 +23.4	55.3	22 00.1 +24.2	55.6	22 33.8 +25.1	55.9	23 07.3 +25.9	56.3	23 40.4 +26.8	56.6	24 13.3 +27.6	57.0	24 45.8 +28.4	57.4	40	40							
41	21 14.3 +22.2	54.0	21 49.4 +23.1	54.3	22 43.3 +23.9	54.6	22 58.9 +24.7	55.0	23 33.2 +25.6	55.3	24 07.2 +26.4	55.7	24 40.9 +27.3	56.0	25 14.2 +28.2	56.4	41	41							

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 87°, 273°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.			
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z				
0	2 35.9 -30.1	91.5	2 34.3 -31.0	91.5	2 32.6 -31.8	91.6	2 30.9 -32.7	91.6	2 29.2 -33.6	91.7	2 27.4 -34.4	91.7	2 25.6 -35.3	91.8	2 23.7 -36.1	91.8	0	2 23.7 -36.1	91.8	0	2 37.2 +36.2	84.2	0	37.2 +36.2	84.2	5		
1	2 05.8 -30.1	92.4	2 03.3 -31.0	92.4	2 00.8 -31.9	92.4	1 58.2 -32.7	92.5	1 55.6 -33.6	92.5	1 53.0 -34.5	92.5	1 50.3 -35.3	92.6	1 47.6 -36.2	92.6	1	1 47.6 -36.2	92.6	1	1 11.4 -36.2	93.4	2	1 11.4 -36.2	93.4	3		
2	1 35.7 -30.1	93.2	1 32.3 -31.0	93.3	1 28.9 -31.9	93.3	1 25.5 -32.8	93.3	1 22.0 -33.7	93.3	1 18.5 -34.5	93.4	1 15.0 -35.4	93.4	0 39.6 -35.4	94.2	0	0 39.6 -35.4	94.2	0	0 35.2 -36.2	94.2	0	0 35.2 -36.2	94.2	4		
3	1 05.6 -30.1	94.1	1 01.3 -31.0	94.1	0 57.0 -31.9	94.1	0 52.7 -32.8	94.1	0 48.3 -33.6	94.2	0 44.0 -34.5	94.2	0 39.6 -35.4	94.2	0 0.42 -35.3	95.0	0	0 0.42 -35.3	95.0	0	0 0.10 +36.2	85.0	0	0 0.10 +36.2	85.0	4		
4	0 35.5 -30.1	95.0	0 30.3 -31.0	95.0	0 25.1 -31.9	95.0	0 19.9 -32.8	95.0	0 14.7 -33.7	95.0	0 0.95 -34.5	95.0	0 0.42 -35.3	95.0	0 0.10 +36.2	85.0	0	0 0.10 +36.2	85.0	0	0 0.10 +36.2	85.0	0	0 0.10 +36.2	85.0	4		
5	0 05.4 -30.1	95.8	0 00.7 +31.0	84.2	0 06.8 +31.9	84.2	0 12.9 +32.7	84.2	0 19.0 +33.6	84.2	0 25.0 +34.5	84.2	0 31.1 +35.4	84.2	0 37.2 +36.2	84.2	0	0 37.2 +36.2	84.2	0	0 37.2 +36.2	84.2	5	0 37.2 +36.2	84.2	5		
6	0 24.7 +30.1	83.3	0 31.7 +31.0	83.3	0 38.7 +31.9	83.3	0 45.6 +32.8	83.3	0 52.6 +33.6	83.4	0 59.5 +34.5	83.4	1 06.5 +35.3	83.4	1 13.4 +36.1	83.4	1	1 13.4 +36.1	83.4	6	1 49.5 +36.2	82.6	7	1 49.5 +36.2	82.6	7		
7	0 54.8 +30.1	82.4	1 02.7 +31.0	82.5	1 10.6 +31.9	82.5	1 18.4 +32.8	82.5	1 26.2 +33.7	82.5	1 34.0 +34.5	82.5	1 41.8 +35.3	82.6	2 25.7 +36.1	81.8	2	2 25.7 +36.1	81.8	8	4 49.9 +36.0	78.6	12	4 49.9 +36.0	78.6	12		
8	1 24.9 +30.1	81.6	1 33.7 +31.0	81.6	1 42.5 +31.8	81.6	1 51.2 +32.7	81.7	1 59.9 +33.6	81.7	2 08.5 +34.5	81.7	2 17.1 +35.3	81.8	5 25.9 +35.9	77.8	13	5 25.9 +35.9	77.8	13	5 25.9 +35.9	77.8	13	5 25.9 +35.9	77.8	13		
9	1 55.0 +30.1	80.7	2 04.7 +30.9	80.7	2 14.3 +31.8	80.8	2 23.9 +32.7	80.8	2 33.5 +33.5	80.9	2 40.3 +34.4	80.9	2 48.2 +35.3	81.0	3 01.8 +36.1	81.0	3	3 01.8 +36.1	81.0	9	8 59.9 +35.4	72.9	19	8 59.9 +35.4	72.9	19		
10	2 25.1 +30.0	79.8	2 35.6 +30.9	79.9	2 46.1 +31.8	79.9	2 56.6 +32.7	80.0	3 07.0 +33.5	80.0	3 17.4 +34.3	80.1	3 27.7 +35.2	80.1	3 37.9 +36.0	80.2	10	3 37.9 +36.0	80.2	10	3 37.9 +36.0	80.2	10	3 37.9 +36.0	80.2	10		
11	2 55.1 +30.0	79.0	3 06.5 +30.9	79.0	3 17.9 +31.8	79.1	3 29.3 +32.6	79.1	3 40.5 +33.5	79.2	3 51.7 +34.4	79.3	4 02.9 +35.1	79.3	4 13.9 +36.0	79.4	11	4 13.9 +36.0	79.4	11	4 13.9 +36.0	79.4	11	4 13.9 +36.0	79.4	11		
12	3 25.1 +29.9	78.1	3 37.4 +30.8	78.2	3 49.7 +31.7	78.2	4 01.9 +32.5	78.3	4 14.0 +33.4	78.4	4 26.1 +34.2	78.4	4 38.0 +35.2	78.5	5 00.3 +34.2	77.6	5 13.2 +35.0	77.7	5	5 13.2 +35.0	77.7	13	5 13.2 +35.0	77.7	13	5 13.2 +35.0	77.7	13
13	3 55.0 +29.9	77.2	4 08.2 +30.8	77.3	4 21.4 +31.6	77.4	4 34.4 +32.6	77.5	4 47.4 +33.4	77.5	5 00.3 +34.2	77.6	5 13.2 +35.0	77.7	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14		
14	4 24.9 +29.8	76.4	4 39.0 +30.7	76.5	4 53.0 +31.6	76.5	5 07.0 +32.4	76.6	5 20.8 +33.3	76.7	5 34.5 +34.2	76.8	5 48.2 +35.0	76.9	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14	6 01.8 +35.8	77.0	14		
15	4 54.7 +29.8	75.5	5 09.7 +30.6	75.6	5 24.6 +31.5	75.7	5 39.4 +32.4	75.8	5 54.1 +33.2	75.9	6 08.7 +34.1	76.0	6 23.2 +34.9	76.1	6 37.6 +35.7	76.2	15	6 37.6 +35.7	76.2	15	6 37.6 +35.7	76.2	15	6 37.6 +35.7	76.2	15		
16	5 24.5 +29.7	74.6	5 40.3 +30.6	74.7	5 56.1 +31.4	74.8	6 11.8 +32.2	74.9	6 27.3 +33.2	75.0	6 42.8 +33.9	75.1	6 58.1 +34.8	75.3	7 13.3 +35.6	75.4	16	7 13.3 +35.6	75.4	16	7 13.3 +35.6	75.4	16	7 13.3 +35.6	75.4	16		
17	5 54.2 +29.6	73.8	6 10.9 +30.5	73.9	6 27.5 +31.4	74.0	6 44.0 +32.2	74.1	7 00.5 +33.0	74.2	7 16.7 +33.9	74.3	7 32.9 +34.7	74.4	7 48.9 +35.6	74.6	17	7 48.9 +35.6	74.6	17	7 48.9 +35.6	74.6	17	7 48.9 +35.6	74.6	17		
18	6 23.8 +29.5	72.9	6 41.4 +30.4	73.0	6 58.9 +31.2	73.1	7 16.2 +32.1	73.2	7 33.5 +32.9	73.4	7 50.6 +33.8	73.5	8 07.6 +34.6	73.6	8 24.5 +35.4	73.8	18	8 24.5 +35.4	73.8	18	8 24.5 +35.4	73.8	18	8 24.5 +35.4	73.8	18		
19	6 53.3 +29.4	72.0	7 11.8 +30.2	72.1	7 30.1 +31.2	72.2	7 48.3 +32.0	72.4	8 06.4 +32.9	72.5	8 24.4 +33.7	72.6	8 42.2 +34.6	72.8	8 59.9 +35.4	72.9	19	8 59.9 +35.4	72.9	19	8 59.9 +35.4	72.9	19	8 59.9 +35.4	72.9	19		
20	7 22.7 +29.3	71.1	7 42.0 +30.2	71.3	8 01.3 +31.0	71.4	8 20.3 +31.9	71.5	8 39.3 +32.7	71.7	8 58.1 +33.6	71.8	9 16.8 +34.4	72.0	9 35.3 +35.2	72.1	20	9 35.3 +35.2	72.1	20	9 35.3 +35.2	72.1	20	9 35.3 +35.2	72.1	20		
21	7 52.0 +29.2	70.2	8 12.2 +30.1	70.4	8 32.3 +30.9	70.5	8 52.2 +31.8	70.7	9 12.0 +32.6	70.8	9 31.7 +33.4	71.0	9 51.2 +34.2	71.1	10 10.5 +35.1	71.3	21	10 10.5 +35.1	71.3	21	10 10.5 +35.1	71.3	21	10 10.5 +35.1	71.3	21		
22	8 21.2 +29.1	69.4	8 42.3 +29.9	69.5	9 03.2 +30.8	69.7	9 24.0 +31.7	69.8	9 44.6 +32.5	70.0	10 05.1 +33.3	70.1	10 25.4 +34.2	70.3	10 45.6 +34.9	70.5	22	10 45.6 +34.9	70.5	22	10 45.6 +34.9	70.5	22	10 45.6 +34.9	70.5	22		
23	8 50.3 +28.9	68.5	9 12.2 +29.8	68.6	9 34.0 +30.7	68.8	9 55.7 +31.5	68.9	10 17.1 +32.4	69.1	10 38.4 +33.2	69.3	10 59.6 +34.0	69.5	11 20.5 +34.9	69.6	23	11 20.5 +34.9	69.6	23	11 20.5 +34.9	69.6	23	11 20.5 +34.9	69.6	23		
24	9 19.2 +28.9	67.6	9 42.0 +29.7	67.7	10 04.7 +30.5	67.9	10 27.2 +31.3	68.1	10 49.5 +32.2	68.3	11 11.6 +33.1	68.4	11 33.6 +33.9	68.6	11 55.4 +34.7	68.8	24	11 55.4 +34.7	68.8	24	11 55.4 +34.7	68.8	24	11 55.4 +34.7	68.8	24		
25	9 48.1 +28.7	66.7	10 11.7 +29.6	66.9	10 35.2 +30.4	67.0	10 58.5 +31.3	67.2	11 21.7 +32.1	67.4	11 44.7 +32.9	67.6	12 07.5 +33.7	67.8	12 30.1 +34.5	68.0	25	12 30.1 +34.5	68.0	25	12 30.1 +34.5	68.0	25	12 30.1 +34.5	68.0	25		
26	10 16.8 +28.5	65.8	10 41.3 +29.4	66.0	11 05.6 +30.2	66.2	11 29.8 +31.0	66.3	11 53.8 +31.9	66.5	12 17.6 +32.7	66.7	12 41.2 +33.5	66.9	13 04.6 +34.0	67.1	26	13 04.6 +34.0	67.1	26	13 04.6 +34.0	67.1	26	13 04.6 +34.0	67.1	26		
27	10 45.3 +28.4	64.9	11 10.7 +29.2	65.1	11 35.8 +30.1	65.3	12 00.8 +31.0	65.5	12 25.7 +31.7	65.7	12 50.3 +32.6	65.9	13 14.7 +33.4	66.1	15 59.8 +32.4	66.8	27	15 59.8 +32.4	66.8	27	15 59.8 +32.4	66.8	27	15 59.8 +32.4	66.8	27		
28	14 27.4 +28.3	59.6	15 10.2 +28.2	59.8	15 31.3 +28.5	59.8	16 28.0 +28.1	59.8	17 01.2 +28.9	59.5	17 34.2 +29.7	59.8	18 07.0 +30.4	59.7	18 39.5 +31.2	59.3	38	19 11.8 +32.0	59.3	38	19 11.8 +32.0	59.3	38	19 11.8 +32.0	59.3	38		
29	14 57.4 +28.2	58.7	15 21.7 +28.1	58.9	16 34.1 +28.0	59.1	17 27.0 +28.1	59.2	18 04.8 +28.5	59.3	18 30.5 +27.7	59.4	19 10.0 +28.5	59.5	20 46.6 +31.4	59.6	46	20 46.6 +31.4	59.6	46	20 46.6 +31.4	59.6	46	20 46.6 +31.4	59.6	46		
30	18 47.4 +28.1	58.2	19 10.8 +28.2	58.3	20 30.6 +28.4	58.5	21 10.8 +28.2	58.6	21 50.7 +27.0	58.4	22 30.5 +27.7	58.7	23 10.0 +28.5	59.0	23 49.2 +29.3	59.3	46	23 49.2 +29.3	59.3	46	23 49.2 +29.3	59.3						

88°, 272° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	1 43.9 +30.0	91.0	1 42.9 +30.9	91.0	1 41.8 +31.8	91.1	1 40.6 +32.7	91.1	1 39.5 +33.5	91.1	1 38.3 +34.4	91.1	1 37.1 +35.2	91.2	1 35.8 +36.1	91.2	1 34.6 +37.0	91.2	1 33.4 +37.9	91.2	1 32.2 +38.8	91.2	1 31.0 +39.7	91.2	0
1	2 13.9 +30.0	90.1	2 13.8 +30.8	90.2	2 13.6 +31.7	90.2	2 13.3 +32.7	90.3	2 13.0 +33.6	90.3	2 12.7 +34.4	90.3	2 12.3 +35.3	90.4	2 11.9 +36.1	90.4	2 11.5 +37.0	90.4	2 11.1 +37.9	90.4	2 10.7 +38.8	90.4	2 10.3 +39.7	90.4	1
2	2 43.9 +29.9	89.3	2 44.6 +30.9	89.3	2 45.3 +31.8	89.4	2 46.0 +32.6	89.4	2 46.6 +33.4	89.5	2 47.1 +34.4	89.5	2 47.6 +35.2	89.6	2 48.0 +36.1	89.6	2 48.4 +37.0	89.6	2 48.8 +37.9	89.6	2 49.2 +38.8	89.6	2 49.6 +39.7	89.6	2
3	3 13.8 +29.9	88.4	3 15.5 +30.8	88.5	3 17.1 +31.6	88.5	3 18.6 +32.6	88.6	3 20.0 +33.5	88.6	3 21.5 +34.3	88.7	3 22.8 +35.2	88.7	3 24.1 +36.0	88.8	3 25.4 +36.9	88.8	3 26.7 +37.8	88.8	3 28.0 +38.7	88.8	3 29.3 +39.6	88.8	3
4	3 43.7 +29.8	87.5	3 46.3 +30.7	87.6	3 48.7 +31.7	87.7	3 51.2 +32.5	87.7	3 53.5 +33.4	87.8	3 55.8 +34.2	87.9	3 58.0 +35.1	87.9	4 00.1 +36.0	88.0	4 01.4 +36.9	88.0	4 02.7 +37.8	88.0	4 04.0 +38.7	88.0	4 05.3 +39.6	88.0	4
5	4 13.5 +29.8	86.7	4 17.0 +30.7	86.7	4 20.4 +31.6	86.8	4 23.7 +32.4	86.9	4 26.9 +33.3	87.0	4 30.0 +34.2	87.0	4 33.1 +35.1	87.1	4 36.1 +35.9	87.2	4 39.1 +36.8	87.2	4 42.1 +37.7	87.2	4 45.1 +38.6	87.2	4 48.1 +39.5	87.2	5
6	4 43.3 +29.7	85.8	4 47.7 +30.6	85.9	4 52.0 +31.5	86.0	4 56.1 +32.4	86.0	5 00.2 +33.3	86.1	5 04.2 +34.2	86.2	5 08.2 +35.0	86.3	5 12.0 +35.8	86.4	5 16.0 +36.7	86.4	5 20.0 +37.5	86.4	5 24.0 +38.4	86.4	5 28.0 +39.3	86.4	6
7	5 13.0 +29.7	84.9	5 18.3 +30.6	85.0	5 23.5 +31.4	85.1	5 28.5 +32.4	85.2	5 33.5 +33.2	85.3	5 38.4 +34.1	85.4	5 43.2 +34.9	85.5	5 47.8 +35.8	85.6	5 52.2 +36.7	85.6	5 57.0 +37.6	85.6	5 61.8 +38.5	85.6	5 66.6 +39.4	85.6	7
8	5 42.7 +29.5	84.0	5 48.9 +30.4	84.1	5 54.9 +31.3	84.2	6 00.9 +32.2	84.4	6 06.7 +33.2	84.5	6 12.5 +34.0	84.6	6 18.1 +34.9	84.7	6 23.6 +35.7	84.8	6 29.4 +37.4	84.8	6 35.2 +39.1	84.8	6 41.0 +40.0	84.8	6 47.8 +41.9	84.8	8
9	6 12.2 +29.5	83.2	6 19.3 +30.4	83.3	6 26.3 +31.3	83.4	6 33.1 +32.2	83.5	6 39.9 +33.0	83.6	6 46.5 +33.9	83.7	6 53.0 +34.7	83.8	6 59.3 +35.6	84.0	6 65.6 +36.5	84.0	6 72.0 +37.4	84.0	6 78.4 +38.3	84.0	6 85.0 +39.2	84.0	9
10	6 41.7 +29.4	82.3	6 49.7 +30.3	82.4	6 57.6 +31.2	82.5	7 05.3 +32.1	82.7	7 12.9 +33.0	82.8	7 20.4 +33.8	82.9	7 27.7 +34.7	83.0	7 34.9 +35.6	83.2	7 42.1 +36.5	83.2	7 49.3 +37.4	83.2	7 56.5 +38.3	83.2	7 63.7 +39.2	83.2	10
11	7 11.1 +29.3	81.4	7 20.0 +30.2	81.5	7 28.8 +31.0	81.7	7 37.4 +32.0	81.8	7 45.9 +32.8	81.9	7 54.2 +33.7	82.1	8 02.4 +34.6	82.2	8 10.5 +35.4	82.3	8 18.7 +36.3	82.3	8 26.8 +37.2	82.3	8 35.0 +38.1	82.3	8 43.8 +39.0	82.3	11
12	7 40.4 +29.2	80.5	7 50.2 +30.1	80.7	7 59.8 +31.0	80.8	8 09.4 +31.8	80.9	8 18.7 +32.8	81.1	8 27.9 +33.7	81.2	8 37.0 +34.5	81.4	8 45.9 +35.3	81.5	8 54.0 +36.1	81.5	8 62.1 +37.0	81.5	8 70.2 +37.9	81.5	8 78.3 +38.8	81.5	12
13	8 09.6 +29.0	79.7	8 20.3 +29.9	79.8	8 30.8 +30.9	79.9	8 41.2 +31.8	80.1	8 51.5 +32.6	80.2	9 01.6 +33.5	80.4	9 11.5 +34.4	80.6	9 21.2 +35.3	80.7	9 31.0 +36.2	80.8	9 40.8 +37.1	80.8	9 50.5 +38.0	80.8	9 59.8 +38.9	80.8	13
14	8 38.6 +29.0	78.8	8 50.2 +29.9	78.9	9 01.7 +30.7	79.1	9 13.0 +31.6	79.2	9 24.1 +32.5	79.4	9 35.1 +33.3	79.6	9 45.9 +34.2	79.7	9 55.5 +35.1	79.9	10 05.3 +36.0	80.0	10 15.1 +36.9	80.0	10 24.9 +37.8	80.0	10 34.7 +38.7	80.0	14
15	9 07.6 +28.8	77.9	9 20.1 +29.7	78.0	9 32.4 +30.6	78.2	9 44.6 +31.5	78.4	9 56.6 +32.4	78.5	10 08.4 +33.3	78.7	10 20.1 +34.1	78.9	10 31.6 +34.9	79.1	10 43.1 +35.7	79.3	10 54.6 +36.5	79.5	10 66.0 +37.4	79.7	10 77.4 +38.3	79.9	15
16	9 36.4 +28.6	77.0	9 49.8 +29.6	77.2	10 03.0 +30.5	77.3	10 16.1 +31.4	77.5	10 29.0 +32.2	77.7	10 41.7 +33.1	77.9	10 54.2 +34.0	78.1	11 06.5 +34.9	78.2	11 18.0 +35.8	78.4	11 29.5 +36.7	78.6	11 41.4 +37.6	78.8	11 53.0 +38.5	78.9	16
17	10 05.0 +28.6	76.1	10 19.4 +29.4	76.3	10 33.5 +30.3	76.5	10 47.5 +31.2	76.6	11 01.2 +32.1	76.8	11 14.8 +33.0	77.0	11 28.2 +33.8	77.2	11 41.4 +34.7	77.4	11 54.4 +35.6	77.6	12 07.4 +36.4	77.8	12 20.4 +37.3	78.0	12 33.4 +38.2	78.2	17
18	10 33.6 +28.3	75.2	10 48.8 +29.3	75.4	11 03.8 +30.2	75.6	11 18.7 +31.0	75.8	11 33.3 +32.0	76.0	11 47.8 +32.8	76.2	12 02.0 +33.7	76.4	12 16.1 +34.5	76.6	12 29.1 +35.3	76.8	12 42.1 +36.1	77.0	12 55.1 +37.0	77.2	18		
19	11 01.9 +28.3	74.3	11 18.1 +29.1	74.5	12 04.0 +30.0	74.7	11 49.7 +30.9	74.9	12 05.3 +31.8	75.1	12 20.6 +32.7	75.3	12 35.7 +33.5	75.5	12 50.6 +34.4	75.7	12 56.0 +35.3	75.9	13 07.0 +36.2	76.1	13 20.9 +37.1	76.3	13 34.0 +38.0	76.5	19
20	11 30.2 +28.0	73.4	11 47.2 +28.9	73.6	12 04.0 +29.9	73.8	12 20.6 +30.8	74.0	12 37.1 +31.6	74.2	12 53.3 +32.4	74.4	13 09.2 +33.4	74.7	13 25.0 +34.2	74.9	13 41.8 +35.1	75.1	13 57.6 +36.0	75.3	13 73.4 +36.9	75.5	13 89.2 +37.8	75.7	20
21	11 58.2 +27.9	72.5	12 16.1 +28.8	72.7	12 33.9 +29.6	72.9	12 51.4 +30.5	73.1	13 08.7 +31.4	73.4	13 25.7 +32.4	73.6	13 42.6 +33.2	73.8	13 59.2 +34.0	74.1	13 75.1 +34.9	74.4	13 91.0 +35.8	74.7	13 107.8 +36.7	75.0	13 124.6 +37.6	75.3	21
22	12 26.1 +27.7	71.6	12 44.9 +28.6	71.8	13 03.5 +29.5	72.0	13 21.9 +30.4	72.3	13 40.1 +31.3	72.5	13 58.1 +32.1	72.7	14 15.8 +32.9	73.0	14 33.2 +33.9	73.2	14 50.1 +34.7	73.4	14 67.0 +35.5	73.6	14 83.9 +36.3	73.8	14 100.8 +37.1	74.0	22
23	12 53.8 +27.5	70.7	13 13.5 +28.4	70.9	13 33.0 +29.3	71.1	13 52.3 +30.2	71.4	14 11.4 +31.0	71.6	14 30.2 +31.9	71.8	14 48.7 +32.8	72.1	15 07.1 +33.6	72.3	15 24.0 +34.5	72.5	15 41.8 +35.4	72.7	15 59.0 +36.3	72.9	15 76.8 +37.2	73.1	23
24	13 21.3 +27.3	69.8	13 41.9 +28.2	70.0	14 02.3 +29.1	70.2	14 22.5 +30.0	70.5	14 42.4 +30.9	70.7	15 02.1 +31.7	71.0	15 21.5 +32.6	71.2	15 40.7 +33.5	71.4	15 58.7 +34.4	71.6	16 16.5 +35.3	71.8	16 34.3 +36.2	72.0	16 52.1 +37.1	72.2	24
25	14 48.6 +27.1	68.9	14 10.1 +28.0	69.1	14 31.4 +28.9	69.3	14 52.5 +29.7	69.6	15 13.3 +30.6	69.8	15 33.8 +31.6	70.1	15 54.1 +32.4	70.4	16 14.2 +33.2	70.6	16 34.2 +34.1	70.8	16 53.0 +35.0	71.0	16 71.8 +35.9	71.2	16 89.6 +36.8	71.4	25
26	14 38.1 +27.0	68.5	14 50.0 +25.2	68.7	15 00.3 +28.7	68.4	15 22.2 +29.6	68.7	15 43.9 +30.5	68.9	16 05.4 +31.3	69.2	16 26.5 +32.2	69.5	16 47.4 +33.0	69.8	17 06.0 +33.8	70.1	17 26.8 +34.6	70.3	17 47.2 +35.4	70.5	17 67.0 +36.3	70.7	26
27	18 09.1 +24.7	59.5	18 39.5 +25.5	59.8	19 09.5 +26.4	60.1	19 39.3 +27.3	60.4	20 08.9 +28.0	60.7	20 38.1 +28.9	61.0	21 07.0 +29.8	61.4	21 35.6 +30.6	61.7	21 53.0 +31.5	62.0	22 10.2 +32.4	62.3	22 28.6 +33.3	62.6	22 46.4 +34.2	62.9	23
28	18 33.8 +24.3	58.5	19 05.0 +25.2	58.8	19 35.9 +26.0	59.1	20 06.6 +26.9	59.4	20 36.9 +27.8	59.8	21 07.0 +28.6	60.1	21 36.8 +29.4	60.4	22 06.2 +30.3	60.8	22 26.0 +31.2	61.1	22 45.8 +32.0	61.4	22 65.0 +32.8	61.7	23 03.0 +33.7	62.0	23
29	19 22.1 +23.7	56.6	19 45.1 +20.9	46.9	19 25.9 +21.7	47.3	20 07.0 +26.3	57.2	21 00.0 +26.3	57.5	21 32.1 +27.1	57.8	22 03.9 +27.9	58.2	22 35.4 +28.8	58.5	23 06.5 +29.7	58.9	23 24.2 +30.5	59.2	23 43.0 +31.3	59.5	23 62.2 +32.1	59.8	24
30	22 01.2 +																								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 88° , 272°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	1 43.9 -30.0	91.0	1 42.9 -31.0	91.0	1 41.8 -31.9	91.1	1 40.6 -32.7	91.1	1 39.5 -33.6	91.1	1 38.3 -34.4	91.1	1 37.1 -35.3	91.2	1 35.8 -36.1	91.2	0 35.5 -36.9	91.2	0 35.8 -36.1	91.2	0 35.5 -36.9	91.2	0 35.8 -36.1	91.2	0
1	1 13.9 -30.0	91.9	1 11.9 -30.9	91.9	1 09.9 -31.8	91.9	1 07.9 -32.7	91.9	1 05.9 -33.6	91.9	1 03.9 -34.5	92.0	1 01.8 -35.3	92.0	0 59.7 -36.1	92.0	0 59.7 -36.1	92.0	0 59.7 -36.1	92.0	0 59.7 -36.1	92.0	1		
2	0 43.9 -30.1	92.7	0 41.0 -31.0	92.7	0 38.1 -31.8	92.8	0 35.2 -32.7	92.8	0 32.3 -33.6	92.8	0 29.4 -34.5	92.8	0 26.5 -35.3	92.8	0 23.6 -36.2	92.8	0 23.6 -36.2	92.8	0 23.6 -36.2	92.8	0 23.6 -36.2	92.8	2		
3	0 13.8 -30.1	93.6	0 10.0 -30.9	93.6	0 06.3 -31.9	93.6	0 02.5 -32.7	93.6	0 01.3 +33.6	86.4	0 05.1 +34.4	86.4	0 08.8 +35.3	86.4	0 12.6 +36.1	86.4	0 16.3 +36.1	86.4	0 16.3 +36.1	86.4	0 16.3 +36.1	86.4	3		
4	0 16.3 +30.0	85.5	0 20.9 +31.0	85.5	0 25.6 +31.8	85.5	0 30.2 +32.8	85.6	0 34.9 +33.6	85.6	0 39.5 +34.5	85.6	0 44.1 +35.3	85.6	0 48.7 +36.2	85.6	0 48.7 +36.2	85.6	0 48.7 +36.2	85.6	0 48.7 +36.2	85.6	4		
5	0 46.3 +30.0	84.7	0 51.9 +30.9	84.7	0 57.4 +31.8	84.7	1 03.0 +32.7	84.7	1 08.5 +33.5	84.7	1 14.0 +34.4	84.8	1 19.4 +35.3	84.8	1 24.9 +36.1	84.8	1 24.9 +36.1	84.8	1 24.9 +36.1	84.8	1 24.9 +36.1	84.8	5		
6	1 16.3 +30.1	83.8	1 22.8 +30.9	83.8	1 29.2 +31.9	83.9	1 35.7 +32.6	83.9	1 42.0 +33.6	83.9	1 48.4 +34.4	83.9	1 54.7 +35.3	84.0	2 01.0 +36.1	84.0	2 01.0 +36.1	84.0	2 01.0 +36.1	84.0	2 01.0 +36.1	84.0	6		
7	1 46.4 +30.0	82.9	1 53.7 +30.9	83.0	2 01.1 +31.7	83.0	2 08.3 +32.7	83.0	2 15.6 +33.5	83.1	2 22.8 +34.4	83.1	2 30.0 +35.2	83.2	2 37.1 +36.1	83.2	2 37.1 +36.1	83.2	2 37.1 +36.1	83.2	2 37.1 +36.1	83.2	7		
8	2 16.4 +29.9	82.1	2 24.6 +30.9	82.1	2 32.8 +31.8	82.2	2 41.0 +32.6	82.2	2 49.1 +33.5	82.2	2 57.2 +34.3	82.3	3 05.2 +35.2	82.4	3 13.2 +36.0	82.4	3 13.2 +36.0	82.4	3 13.2 +36.0	82.4	3 13.2 +36.0	82.4	8		
9	2 46.3 +30.0	81.2	2 55.5 +30.8	81.3	3 04.6 +31.7	81.3	3 13.6 +32.6	81.4	3 22.6 +33.4	81.4	3 31.5 +34.3	81.5	3 40.4 +35.1	81.5	3 49.2 +36.0	81.6	3 49.2 +36.0	81.6	3 49.2 +36.0	81.6	3 49.2 +36.0	81.6	9		
10	3 16.3 +29.8	80.3	3 26.3 +30.8	80.4	3 36.3 +31.6	80.5	3 46.2 +32.5	80.5	3 56.0 +33.4	80.6	4 05.8 +34.3	80.7	4 15.5 +35.1	80.7	4 25.2 +35.9	80.8	4 25.2 +35.9	80.8	4 25.2 +35.9	80.8	4 25.2 +35.9	80.8	10		
11	3 46.1 +29.9	79.5	3 57.1 +30.7	79.5	4 07.9 +31.6	79.6	4 18.7 +32.5	79.7	4 29.4 +33.4	79.8	4 40.1 +34.2	79.8	4 50.6 +35.1	79.9	5 01.1 +35.9	80.0	5 01.1 +35.9	80.0	5 01.1 +35.9	80.0	5 01.1 +35.9	80.0	11		
12	4 16.0 +29.8	78.6	4 27.8 +30.7	78.7	4 39.5 +31.6	78.8	4 51.2 +32.4	78.8	5 02.8 +33.3	78.9	5 14.3 +34.1	79.0	5 25.7 +34.9	79.1	5 37.0 +35.8	79.2	5 37.0 +35.8	79.2	5 37.0 +35.8	79.2	5 37.0 +35.8	79.2	12		
13	4 45.8 +29.7	77.7	4 58.5 +30.6	77.8	5 11.1 +31.5	77.9	5 23.6 +32.4	78.0	5 36.1 +33.2	78.1	5 48.4 +34.1	78.2	6 00.6 +34.9	78.3	6 12.8 +35.7	78.4	6 12.8 +35.7	78.4	6 12.8 +35.7	78.4	6 12.8 +35.7	78.4	13		
14	5 15.5 +29.6	76.9	5 29.1 +30.5	76.9	5 42.6 +31.4	77.0	5 56.0 +32.2	77.1	6 09.3 +33.1	77.2	6 22.5 +33.9	77.4	6 35.5 +34.9	77.5	6 48.5 +35.7	77.6	6 48.5 +35.7	77.6	6 48.5 +35.7	77.6	6 48.5 +35.7	77.6	14		
15	5 45.1 +29.5	76.0	5 59.6 +30.4	76.1	6 14.0 +31.3	76.2	6 28.2 +32.2	76.3	6 42.4 +33.0	76.4	6 56.4 +33.9	76.5	7 10.4 +34.7	76.6	7 24.2 +35.5	76.8	7 24.2 +35.5	76.8	7 24.2 +35.5	76.8	7 24.2 +35.5	76.8	15		
16	6 14.6 +29.5	75.1	6 30.0 +30.4	75.2	6 45.3 +31.2	75.3	7 00.4 +32.1	75.4	7 15.4 +33.0	75.6	7 30.3 +33.8	75.7	7 45.1 +34.6	75.8	7 59.7 +35.5	76.0	7 59.7 +35.5	76.0	7 59.7 +35.5	76.0	7 59.7 +35.5	76.0	16		
17	6 44.1 +29.4	74.2	7 00.4 +30.2	74.3	7 16.5 +31.1	74.5	7 32.5 +32.0	74.6	7 48.4 +32.8	74.7	8 04.1 +33.7	74.9	8 19.7 +34.6	75.0	8 35.2 +35.3	75.1	8 35.2 +35.3	75.1	8 35.2 +35.3	75.1	8 35.2 +35.3	75.1	17		
18	7 13.5 +29.3	73.4	7 30.6 +30.2	73.5	7 47.6 +31.0	73.6	8 04.5 +31.9	73.7	8 21.2 +32.8	73.9	8 37.8 +33.6	74.0	8 54.3 +34.4	74.2	9 10.5 +35.3	74.3	9 10.5 +35.3	74.3	9 10.5 +35.3	74.3	9 10.5 +35.3	74.3	18		
19	7 42.8 +29.1	72.5	8 00.8 +30.0	72.6	8 18.6 +31.0	72.7	8 36.4 +31.7	72.9	8 54.0 +32.6	73.0	9 11.4 +33.5	73.2	9 28.7 +34.3	73.3	9 45.8 +35.1	73.5	9 45.8 +35.1	73.5	9 45.8 +35.1	73.5	9 45.8 +35.1	73.5	19		
20	8 11.9 +29.1	71.6	8 30.8 +29.9	71.7	8 49.6 +30.7	71.9	9 08.1 +31.7	72.0	9 26.6 +32.5	72.2	9 44.9 +33.3	72.3	10 03.0 +34.2	72.5	10 20.9 +35.0	72.7	10 20.9 +35.0	72.7	10 20.9 +35.0	72.7	10 20.9 +35.0	72.7	20		
21	8 41.0 +28.9	70.7	9 00.7 +29.8	70.9	9 20.3 +30.7	71.0	9 39.8 +31.5	71.2	9 59.1 +32.4	71.3	10 18.2 +33.2	71.5	10 37.2 +34.0	71.7	10 55.9 +34.9	71.9	10 55.9 +34.9	71.9	10 55.9 +34.9	71.9	10 55.9 +34.9	71.9	21		
22	9 09.9 +28.8	69.8	9 30.5 +29.7	70.0	9 51.0 +30.5	70.1	10 11.3 +31.4	70.3	10 31.5 +32.2	70.5	10 51.4 +33.1	70.6	11 11.2 +33.9	70.8	11 30.8 +34.8	71.0	11 30.8 +34.8	71.0	11 30.8 +34.8	71.0	11 30.8 +34.8	71.0	22		
23	9 38.7 +28.7	68.9	10 00.2 +29.5	69.1	10 21.5 +30.4	69.3	10 42.7 +31.2	69.4	11 03.7 +32.1	69.6	11 24.5 +32.9	69.8	11 45.1 +33.8	70.0	12 05.6 +34.5	70.2	12 05.6 +34.5	70.2	12 05.6 +34.5	70.2	12 05.6 +34.5	70.2	23		
24	10 07.4 +28.5	68.0	10 29.7 +29.4	68.2	10 51.9 +30.3	68.4	11 13.9 +31.1	68.6	11 35.8 +31.9	68.8	11 57.4 +32.8	68.9	12 18.9 +33.6	69.1	12 40.1 +34.5	69.4	12 40.1 +34.5	69.4	12 40.1 +34.5	69.4	12 40.1 +34.5	69.4	24		
25	10 35.9 +28.3	67.1	10 59.1 +29.2	67.3	11 22.2 +30.0	67.5	11 45.0 +30.9	67.7	12 07.7 +31.8	67.9	12 30.2 +32.6	68.1	12 52.5 +33.4	68.3	13 14.6 +34.2	68.5	13 14.6 +34.2	68.5	13 14.6 +34.2	68.5	13 14.6 +34.2	68.5	25		
26	11 04.2 +28.2	66.2	11 28.3 +29.1	66.4	11 52.2 +29.9	66.6	12 15.9 +30.8	66.8	12 39.5 +31.6	67.0	13 02.8 +32.4	67.2	13 25.9 +33.3	67.4	13 48.8 +34.1	67.7	13 48.8 +34.1	67.7	13 48.8 +34.1	67.7	13 48.8 +34.1	67.7	26		
27	11 32.4 +28.1	65.3	11 57.4 +28.0	65.5	12 22.1 +29.8	65.7	12 46.7 +30.6	65.9	13 11.1 +31.4	66.1	13 35.2 +32.3	66.4	13 59.2 +33.1	66.6	14 22.9 +33.9	66.8	14 56.8 +33.7	67.0	14 56.8 +33.7	67.0	14 56.8 +33.7	67.0	27		
28	12 00.5 +27.8	64.4	12 26.3 +27.8	64.6	12 51.9 +29.5	64.8	13 17.3 +30.4	65.1	13 42.5 +31.2	65.3	14 07.5 +32.1	65.4	14 32.4 +32.9	65.7	15 05.2 +32.7	66.0	15 30.5 +32.4	66.1	15 30.5 +32.4	66.1	15 30.5 +32.4	66.1	28		
29	15 11.4 +26.5	58.0	15 43.1 +27.3	58.3	16 14.6 +28.0	58.5	16 45.8 +28.9	58.8	17 16.8 +29.7	59.0	17 46.5 +30.5	59.3	18 18.1 +31.3	59.6	18 48.3 +32.2	59.9	18 48.3 +32.2	59.9	18 48.3 +32.2	59.9	18 48.3 +32.2	59.9	35		
30	15 37.9 +26.2	57.1	16 10.4 +27.0	57.3	16 42.6 +27.8	57.6	17 14.7 +28.6	57.8	17 46.5 +29.4	58.1	18 18.1 +30.2	58.4	18 49.4 +31.1	58.7	19 20.5 +31.8	59.0	19 20.5 +31.8	59.0	19 20.5 +31.8	59.0	19 20.5 +31.8	59.0	36		
31	16 04.1 +25.9	56.2	16 37.4 +26.7	56.4	17 10.4 +26.7	56.7	17 43.3 +28.4	56.9	18 15.9 +29.2	57.2	18 48.3 +30.5	57.8	19 20.5 +30.8	58.7	19 52.3 +31.6	58.1	19 52.3 +31.6	58.1	19 52.3 +31.6	58.1	19 52.3 +31.6	58.1	37		
32	16 30.0 +25.7	55.2	17 04.1 +26.4	55.5	17 38.0 +27.3	55.7	18 11.7 +28.1	56.0	18 45.1 +28.9	56.3	19 18.3 +29.7	56.6	19 51.3 +30.5	56.9	20 23.9 +31.3	57.2	20 23.9 +3								

89°, 271° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.	
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z		
0	0 52.0 +30.0	90.5	0 51.4 +30.9	90.5	0 50.9 +31.8	90.5	0 50.3 +32.7	90.5	0 49.7 +33.6	90.6	0 49.1 +34.5	90.6	0 48.5 +35.3	90.6	0 47.9 +36.1	90.6	0	47.9 +36.1	90.6	0	47.9 +36.1	90.6	0	47.9 +36.1	90.6	0
1	1 22.0 +29.9	89.6	1 22.3 +30.9	89.7	1 22.7 +31.7	89.7	1 23.0 +32.7	89.7	1 23.3 +33.5	89.7	1 23.6 +34.4	89.8	1 23.8 +35.3	89.8	1 24.0 +36.1	89.8	1	24.0 +36.1	89.8	1	24.0 +36.1	89.8	1	24.0 +36.1	89.8	1
2	1 51.9 +30.0	88.8	1 53.2 +30.9	88.8	1 54.4 +31.8	88.8	1 55.7 +32.6	88.9	1 56.8 +33.5	88.9	1 58.0 +34.3	88.9	1 59.1 +35.2	89.0	2 00.1 +36.1	89.0	2	00.1 +36.1	89.0	2	00.1 +36.1	89.0	2	00.1 +36.1	89.0	2
3	2 21.9 +29.9	87.9	2 24.1 +30.8	87.9	2 26.2 +31.7	88.0	2 28.3 +32.6	88.0	2 30.3 +33.5	88.1	2 32.3 +34.4	88.1	2 34.3 +35.2	88.2	2 36.2 +36.0	88.2	2	36.2 +36.0	88.2	2	36.2 +36.0	88.2	2	36.2 +36.0	88.2	2
4	2 51.8 +29.9	87.0	2 54.9 +30.8	87.1	2 57.9 +31.7	87.1	3 00.9 +32.5	87.2	3 03.8 +33.4	87.2	3 06.7 +34.3	87.3	3 09.5 +35.1	87.3	3 12.2 +36.0	87.4	3	12.2 +36.0	87.4	3	12.2 +36.0	87.4	3	12.2 +36.0	87.4	3
5	3 21.7 +29.8	86.2	3 25.7 +30.7	86.2	3 29.6 +31.6	86.3	3 33.4 +32.6	86.3	3 37.2 +33.4	86.4	3 41.0 +34.2	86.5	3 44.6 +35.1	86.5	3 48.2 +36.0	86.6	3	48.2 +36.0	86.6	3	48.2 +36.0	86.6	3	48.2 +36.0	86.6	3
6	3 51.5 +29.8	85.3	3 56.4 +30.7	85.4	4 01.2 +31.6	85.4	4 06.0 +32.4	85.5	4 10.6 +33.4	85.6	4 15.2 +34.2	85.6	4 19.7 +35.1	85.7	4 24.2 +35.9	85.8	4	24.2 +35.9	85.8	4	24.2 +35.9	85.8	4	24.2 +35.9	85.8	4
7	4 21.3 +29.7	84.4	4 27.1 +30.6	84.5	4 32.8 +31.5	84.6	4 38.4 +32.4	84.7	4 44.0 +33.2	84.7	4 49.4 +34.2	84.8	4 54.8 +35.0	84.9	5 00.1 +35.8	85.0	5	00.1 +35.8	85.0	5	00.1 +35.8	85.0	5	00.1 +35.8	85.0	5
8	4 51.0 +29.7	83.6	5 04.3 +31.5	83.7	5 10.8 +32.4	83.8	5 17.2 +33.3	83.9	5 23.6 +34.0	84.0	5 29.8 +34.9	84.1	5 35.9 +35.8	84.2	6 00.1 +36.0	84.2	6	00.1 +36.0	84.2	6	00.1 +36.0	84.2	6	00.1 +36.0	84.2	6
9	5 20.7 +29.6	82.7	5 28.3 +30.5	82.8	5 35.8 +31.3	82.9	5 43.2 +32.2	83.0	5 50.5 +33.1	83.1	5 57.6 +34.0	83.2	6 04.7 +34.9	83.3	6 11.7 +35.7	83.4	6	11.7 +35.7	83.4	6	11.7 +35.7	83.4	6	11.7 +35.7	83.4	6
10	5 50.3 +29.5	81.8	5 58.8 +30.4	81.9	6 07.1 +31.3	82.0	6 15.4 +32.2	82.1	6 23.6 +33.0	82.2	6 31.6 +34.0	82.3	6 39.6 +34.8	82.5	6 47.4 +35.6	82.6	6	47.4 +35.6	82.6	6	47.4 +35.6	82.6	6	47.4 +35.6	82.6	6
11	6 19.8 +29.4	80.9	6 29.2 +30.3	81.0	6 38.4 +31.2	81.2	6 47.6 +32.1	81.3	6 56.6 +33.0	81.4	7 05.6 +33.8	81.5	7 14.4 +34.6	81.6	7 23.0 +35.6	81.8	7	23.0 +35.6	81.8	7	23.0 +35.6	81.8	7	23.0 +35.6	81.8	7
12	6 49.2 +29.3	80.1	6 59.5 +30.2	80.2	7 09.6 +31.2	80.3	7 19.7 +32.0	80.4	7 29.6 +32.9	80.5	7 39.4 +33.7	80.7	7 49.0 +34.6	80.8	7 58.6 +35.4	81.0	8	58.6 +35.4	81.0	8	58.6 +35.4	81.0	8	58.6 +35.4	81.0	8
13	7 18.5 +29.2	79.2	7 29.7 +30.1	79.3	7 40.8 +31.0	79.4	7 51.7 +31.9	79.6	8 02.5 +32.8	79.7	8 13.1 +33.7	79.8	8 23.6 +34.5	80.0	8 34.0 +35.3	80.1	8	34.0 +35.3	80.1	8	34.0 +35.3	80.1	8	34.0 +35.3	80.1	8
14	7 47.7 +29.1	78.3	7 59.8 +30.0	78.4	8 11.8 +30.9	78.6	8 23.6 +31.8	78.7	8 35.3 +32.6	78.9	8 46.8 +33.5	79.0	8 58.1 +34.4	79.2	9 09.3 +35.3	79.3	9	09.3 +35.3	79.3	9	09.3 +35.3	79.3	9	09.3 +35.3	79.3	9
15	8 16.8 +29.0	77.4	8 29.8 +29.9	77.6	8 42.7 +30.7	77.7	8 55.4 +31.6	77.9	9 07.9 +32.5	78.0	9 20.3 +33.4	78.2	9 32.5 +34.3	78.3	9 44.6 +35.1	78.5	9	44.6 +35.1	78.5	9	44.6 +35.1	78.5	9	44.6 +35.1	78.5	9
16	8 45.8 +28.8	76.5	8 59.7 +29.7	76.7	9 13.4 +30.7	76.8	9 27.0 +31.6	77.0	9 40.4 +32.5	77.2	9 53.7 +33.3	77.3	10 06.8 +34.1	77.5	10 19.7 +35.0	77.7	10	19.7 +35.0	77.7	10	19.7 +35.0	77.7	10	19.7 +35.0	77.7	10
17	9 14.6 +28.8	75.6	9 29.4 +29.7	75.8	9 44.1 +30.5	76.0	9 58.6 +31.4	76.1	10 12.9 +32.2	76.3	10 27.0 +33.1	76.5	10 40.9 +34.0	76.7	10 54.7 +34.8	76.8	10	54.7 +34.8	76.8	10	54.7 +34.8	76.8	10	54.7 +34.8	76.8	10
18	9 43.4 +28.6	74.7	9 59.1 +29.5	74.9	10 14.6 +30.4	75.1	10 30.0 +31.2	75.3	10 45.1 +32.2	75.4	11 00.1 +33.0	75.6	11 14.9 +33.9	75.8	11 29.5 +34.7	76.0	12	29.5 +34.7	76.0	12	29.5 +34.7	76.0	12	29.5 +34.7	76.0	12
19	10 12.0 +28.4	73.9	10 28.6 +29.3	74.0	10 45.0 +30.2	74.2	11 01.2 +31.1	74.4	11 17.3 +31.9	74.6	11 33.1 +32.9	74.8	11 48.8 +33.7	75.0	12 04.2 +34.6	75.2	12	04.2 +34.6	75.2	12	04.2 +34.6	75.2	12	04.2 +34.6	75.2	12
20	10 40.4 +28.3	73.0	10 57.9 +29.2	73.1	11 15.2 +30.1	73.3	11 32.3 +31.0	73.5	11 49.2 +31.9	73.7	12 06.0 +32.7	73.9	12 22.5 +33.5	74.1	12 38.8 +34.4	74.3	12	38.8 +34.4	74.3	12	38.8 +34.4	74.3	12	38.8 +34.4	74.3	12
21	11 08.7 +28.1	72.1	11 27.1 +29.0	72.3	11 45.3 +29.9	72.4	12 03.3 +30.8	72.6	12 21.1 +31.6	72.9	12 38.7 +32.5	73.1	12 56.0 +33.4	73.3	13 13.2 +34.2	73.5	13	13.2 +34.2	73.5	13	13.2 +34.2	73.5	13	13.2 +34.2	73.5	13
22	11 36.8 +28.0	71.2	11 56.1 +28.9	71.4	12 15.2 +29.7	71.6	12 34.1 +30.6	71.8	12 52.7 +31.5	72.0	13 11.2 +32.3	72.2	13 29.4 +33.2	72.4	13 47.4 +34.1	72.7	13	47.4 +34.1	72.7	13	47.4 +34.1	72.7	13	47.4 +34.1	72.7	13
23	12 04.8 +27.8	70.3	12 25.0 +28.7	70.5	12 44.9 +29.6	70.7	13 04.7 +30.4	70.9	13 24.2 +31.3	71.1	13 43.5 +32.2	71.3	14 02.6 +33.1	71.6	14 21.5 +33.9	71.8	14	21.5 +33.9	71.8	14	21.5 +33.9	71.8	14	21.5 +33.9	71.8	14
24	12 32.6 +27.6	69.3	12 53.7 +28.4	69.6	13 14.5 +29.4	69.8	13 35.1 +30.3	70.0	13 55.5 +31.2	70.2	14 15.7 +32.0	70.5	14 35.7 +32.8	70.7	14 55.4 +33.6	70.9	14	55.4 +33.6	70.9	14	55.4 +33.6	70.9	14	55.4 +33.6	70.9	14
25	13 00.2 +27.4	68.4	13 22.1 +28.3	68.7	13 43.9 +29.2	68.9	14 05.4 +30.0	69.1	14 26.7 +30.9	69.3	14 47.7 +31.8	69.6	15 08.5 +32.6	69.8	15 29.0 +33.5	70.1	15	29.0 +33.5	70.1	15	29.0 +33.5	70.1	15	29.0 +33.5	70.1	15
26	13 27.6 +27.2	67.5	13 50.4 +28.1	67.7	14 13.1 +28.9	68.0	14 35.4 +29.9	68.2	14 57.6 +30.7	68.5	15 19.5 +31.6	68.7	15 41.1 +32.5	69.0	16 02.5 +33.3	69.2	16	02.5 +33.3	69.2	16	02.5 +33.3	69.2	16	02.5 +33.3	69.2	16
27	13 54.8 +27.0	66.6	14 18.5 +27.9	66.8	14 42.0 +28.8	67.1	15 05.3 +29.6	67.3	15 28.3 +30.5	67.6	15 51.1 +31.3	67.8	16 13.6 +32.2	68.1	16 35.8 +33.1	68.4	16	35.8 +33.1	68.4	16	35.8 +33.1	68.4	16	35.8 +33.1	68.4	16
28	14 21.8 +26.8	65.7	14 46.4 +27.7	65.9	15 10.8 +28.5	66.2	15 34.9 +29.4	66.4	15 58.8 +30.3	66.7	16 22.4 +31.2	67.0	16 44.2 +32.1	67.3	17 08.9 +32.8	67.6	17	08.9 +32.8	67.6	17	08.9 +32.8	67.6	17	08.9 +32.8	67.6	17
29	17 24.5 +25.0	59.1	17 55.1 +25.9	59.4	18 25.5 +26.8	59.7	18 55.7 +27.6	60.0	19 25.6 +28.4	60.3	19 55.2 +29.3	60.6	20 24.5 +30.1	60.9	20 53.5 +31.0	61.2	20	53.5 +31.0	61.2	20	53.5 +31.0	61.2	20	53.5 +31.0	61.2	20
30	17 49.5 +24.8	58.2	18 21.0 +25.7	58.5	18 52.3 +26.5	58.7	19 23.3 +27.3	59.0	19 54.0 +28.2	59.3	20 24.5 +29.0	59.7	20 54.6 +29.9	60.0	21 24.5 +30.7	60.3	21	24.5 +30.7	60.3	21	24.5 +30.7	60.3	21	24.5 +30.7	60.3	21
31	18 14.3 +24.5	57.2	18 46.7 +25.3	57.5	19 18.8 +26.2	57.8	19 50.6 +27.1	58.1</																		

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 89°, 271°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	0 52.0 -30.0	90.5	0 51.4 -30.9	90.5	0 50.9 -31.8	90.5	0 50.3 -32.7	90.5	0 49.7 -33.5	90.6	0 49.1 -34.4	90.6	0 48.5 -35.2	90.6	0 47.9 -36.1	90.6	0 47.3 -37.0	90.6	0 46.7 -37.9	90.6	0 46.1 -38.8	90.6	0 45.5 -39.7	90.6	0		
1	0 22.0 -30.1	91.4	0 20.5 -30.9	91.4	0 19.1 -31.8	91.4	0 17.6 -32.7	91.4	0 16.2 -33.6	91.4	0 14.7 -34.4	91.4	0 13.3 -35.3	91.4	0 11.8 -36.1	91.4	0 10.4 -36.9	91.4	0 9.0 -37.7	91.4	0 7.6 -38.5	91.4	0 6.2 -39.3	91.4	1		
2	0 08.1 +30.0	87.8	0 10.4 +30.9	87.8	0 12.7 +31.8	87.8	0 15.1 +32.6	87.8	0 17.4 +33.5	87.8	0 19.7 +34.4	87.8	0 22.0 +35.3	87.8	0 24.3 +36.1	87.8	0 26.6 +36.9	87.8	0 28.9 +37.7	87.8	0 31.2 +38.5	87.8	0 33.5 +39.3	87.8	2		
3	0 38.1 +30.0	86.9	0 41.3 +30.9	86.9	0 44.5 +31.8	86.9	0 47.7 +32.7	86.9	0 50.9 +33.6	87.0	0 54.1 +34.4	87.0	0 57.3 +35.2	87.0	1 00.4 +36.1	87.0	1 03.6 +37.0	87.0	1 06.8 +37.9	87.0	1 10.0 +38.7	87.0	1 13.2 +39.5	87.0	3		
4	1 08.1 +30.0	86.0	1 12.2 +30.9	86.1	1 16.3 +31.8	86.1	1 20.4 +32.7	86.1	1 24.5 +33.5	86.1	1 28.5 +34.4	86.1	1 32.5 +35.3	86.2	1 36.5 +36.1	86.2	1 40.5 +37.0	86.2	1 44.5 +37.8	86.2	1 48.5 +38.6	86.2	1 52.5 +39.4	86.2	4		
5	1 38.1 +29.9	85.2	1 43.1 +30.9	85.2	1 48.1 +31.8	85.2	1 53.1 +32.6	85.3	1 58.0 +33.5	85.3	2 02.9 +34.4	85.3	2 07.8 +35.2	85.4	2 12.6 +36.1	85.4	2 17.4 +36.9	85.4	2 22.2 +37.7	85.4	2 27.0 +38.5	85.4	2 31.8 +39.3	85.4	5		
6	2 08.0 +30.0	84.3	2 14.0 +30.8	84.3	2 19.9 +31.7	84.4	2 25.7 +32.6	84.4	2 31.5 +33.5	84.5	2 37.3 +34.3	84.5	2 43.0 +35.2	84.6	2 48.7 +36.0	84.6	2 54.4 +36.8	84.6	2 59.1 +37.6	84.6	2 63.8 +38.4	84.6	2 68.5 +39.2	84.6	6		
7	2 38.0 +29.9	83.4	2 44.8 +30.8	83.5	2 51.6 +31.7	83.5	2 58.3 +32.6	83.6	3 05.0 +33.4	83.6	3 11.6 +34.3	83.7	3 18.2 +35.1	83.7	3 24.7 +36.0	83.8	3 30.2 +36.9	83.8	3 36.7 +37.7	83.8	3 43.2 +38.5	83.8	3 49.7 +39.3	83.8	7		
8	3 07.9 +29.8	82.6	3 15.6 +30.7	82.6	3 23.3 +31.6	82.7	3 30.9 +32.5	82.7	3 38.4 +33.4	82.8	3 45.9 +34.3	82.9	3 53.3 +35.1	82.9	4 00.7 +35.9	83.0	4 07.3 +36.7	83.0	4 14.0 +37.5	83.0	4 20.7 +38.3	83.0	4 28.4 +39.1	83.0	8		
9	3 37.7 +29.8	81.7	3 46.3 +30.7	81.8	3 54.9 +31.6	81.8	4 03.4 +32.5	81.9	4 11.8 +33.4	82.0	4 20.2 +34.2	82.0	4 28.4 +35.1	82.1	4 36.6 +35.9	82.2	4 45.0 +36.7	82.2	4 53.4 +37.5	82.2	5 01.8 +38.3	82.2	5 09.2 +39.1	82.2	9		
10	4 07.5 +29.8	80.8	4 17.0 +30.7	80.9	4 26.5 +31.5	81.0	4 35.9 +32.4	81.1	4 45.2 +33.2	81.1	4 54.4 +34.1	81.2	5 03.5 +35.0	81.3	5 12.5 +35.8	81.4	5 21.5 +36.6	81.4	5 30.5 +37.4	81.4	5 39.5 +38.2	81.4	5 48.5 +39.0	81.4	10		
11	4 37.3 +29.7	80.0	4 47.7 +30.6	80.0	4 58.0 +31.5	80.1	5 08.3 +32.3	80.2	5 18.4 +33.2	80.3	5 28.5 +34.1	80.4	5 38.5 +34.9	80.5	5 48.3 +35.8	80.6	5 58.1 +36.7	80.6	5 68.0 +37.5	80.6	5 78.0 +38.3	80.6	5 88.0 +39.1	80.6	11		
12	5 07.0 +29.6	79.1	5 18.3 +30.5	79.2	5 29.5 +31.4	79.3	5 40.6 +32.3	79.4	5 51.6 +33.2	79.5	6 02.6 +34.0	79.6	6 13.4 +34.8	79.7	6 24.1 +35.7	79.8	6 34.7 +36.5	79.8	6 44.6 +37.3	79.8	6 54.5 +38.1	79.8	6 64.4 +38.9	79.8	12		
13	5 36.6 +29.5	78.2	5 48.8 +30.4	78.3	6 00.9 +31.3	78.4	6 12.9 +32.2	78.5	6 24.8 +33.0	78.6	6 36.6 +33.9	78.7	6 48.2 +34.8	78.9	6 59.8 +35.6	79.0	7 10.3 +36.4	79.0	7 19.7 +37.2	79.0	7 29.0 +38.0	79.0	7 38.8 +38.8	79.0	13		
14	6 06.1 +29.5	77.3	6 19.2 +30.4	77.4	6 32.2 +31.2	77.6	6 45.1 +32.1	77.7	6 57.8 +33.0	77.8	7 10.5 +33.8	77.9	7 23.0 +34.6	78.0	7 33.5 +35.6	78.2	7 43.2 +36.4	78.2	7 52.9 +37.2	78.2	7 62.6 +38.0	78.2	7 72.3 +38.8	78.2	14		
15	6 35.6 +29.3	76.5	6 49.6 +30.2	76.6	7 03.4 +31.2	76.7	7 17.2 +32.0	76.8	7 30.8 +32.9	76.9	7 44.3 +33.7	77.1	7 57.6 +34.6	77.2	8 10.9 +35.4	77.3	8 21.3 +36.2	77.3	8 31.8 +37.0	77.3	8 42.3 +37.8	77.3	8 52.2 +38.6	77.3	15		
16	7 04.9 +29.3	75.6	7 19.8 +30.1	75.7	7 34.6 +31.0	75.8	7 49.2 +31.9	76.0	8 03.7 +32.7	76.1	8 18.0 +33.6	76.2	8 32.2 +34.5	76.4	8 46.3 +35.3	76.5	8 56.2 +36.1	76.5	8 66.1 +36.9	76.5	8 76.0 +37.7	76.5	8 85.9 +38.5	76.5	16		
17	7 34.2 +29.1	74.7	7 49.9 +30.1	74.8	8 05.6 +30.9	75.0	8 21.1 +31.8	75.1	8 36.4 +32.7	75.3	8 51.6 +33.5	75.4	9 06.7 +34.3	75.6	9 21.6 +35.1	75.7	9 31.5 +35.9	75.7	9 41.4 +36.7	75.7	9 51.3 +37.5	75.7	9 61.2 +38.3	75.7	17		
18	8 03.3 +29.1	73.8	8 20.0 +29.9	74.0	8 36.5 +30.8	74.1	8 52.9 +31.6	74.2	9 09.1 +32.5	74.4	9 25.1 +33.4	74.6	9 41.0 +34.2	74.7	9 56.7 +35.1	74.9	10 06.5 +35.9	74.9	10 22.4 +36.7	74.9	10 38.2 +37.5	74.9	10 53.9 +38.3	74.9	18		
19	8 32.4 +28.9	72.9	8 49.9 +29.8	73.1	9 07.3 +30.7	73.2	9 24.5 +31.6	73.4	9 41.6 +32.4	73.5	9 58.5 +33.3	73.7	10 15.2 +34.1	73.9	10 31.8 +34.9	74.1	10 48.1 +35.7	74.1	10 64.5 +36.5	74.1	10 81.9 +37.3	74.1	10 98.3 +38.1	74.1	19		
20	9 01.3 +28.8	72.0	9 19.7 +29.7	72.2	9 38.0 +30.5	72.4	9 56.1 +31.4	72.5	10 14.0 +32.3	72.7	10 31.8 +33.1	72.9	10 49.3 +34.0	73.1	11 06.7 +34.8	73.2	11 24.1 +35.6	73.2	11 41.5 +36.4	73.2	11 58.9 +37.2	73.2	11 75.7 +37.8	73.2	20		
21	9 30.1 +28.6	71.2	9 49.4 +29.5	71.3	10 08.5 +30.4	71.5	10 27.5 +31.3	71.7	10 46.3 +32.1	71.8	11 04.9 +33.0	72.0	11 23.3 +33.8	72.2	11 41.5 +34.7	72.4	11 59.1 +35.5	72.4	12 16.9 +36.3	72.4	12 34.5 +37.1	72.4	12 52.1 +37.9	72.4	21		
22	9 58.7 +28.6	70.3	10 18.9 +29.4	70.4	10 38.9 +30.3	70.6	10 58.8 +31.1	70.8	11 18.4 +32.0	71.0	11 37.9 +32.8	71.2	11 57.1 +33.7	71.4	12 16.2 +34.5	71.6	12 34.5 +35.3	71.6	12 52.5 +36.1	71.6	12 70.4 +36.9	71.6	12 88.3 +37.7	71.6	22		
23	10 27.3 +28.3	69.4	10 48.3 +29.3	69.5	11 09.2 +30.1	69.7	11 29.9 +30.9	69.9	11 50.4 +31.8	70.1	12 10.7 +32.7	70.3	12 30.8 +33.5	70.5	12 50.7 +34.4	70.7	13 08.6 +35.1	70.9	13 28.5 +35.9	70.9	13 48.3 +36.7	70.9	13 68.1 +37.5	70.9	23		
24	10 55.6 +28.2	68.5	11 17.6 +29.0	68.7	11 39.3 +29.9	68.8	12 00.8 +30.9	69.0	12 22.2 +31.7	69.2	12 43.4 +32.5	69.5	13 04.3 +33.4	69.7	13 25.1 +34.1	69.9	13 45.9 +34.9	70.1	13 65.7 +35.7	70.1	13 85.5 +36.5	70.1	13 95.3 +37.3	70.1	24		
25	11 23.8 +28.1	67.6	11 46.6 +28.9	67.8	12 09.2 +29.8	68.0	12 31.7 +30.6	68.2	12 53.9 +31.4	68.4	13 15.9 +32.3	68.6	13 37.7 +33.1	68.8	13 59.2 +34.0	69.0	14 01.7 +34.8	69.2	14 21.5 +35.6	69.2	14 41.3 +36.4	69.2	14 59.1 +37.2	69.2	25		
26	11 47.3 +28.1	66.7	12 15.5 +28.8	66.9	12 39.0 +29.6	67.1	13 02.3 +30.4	67.3	13 25.3 +31.4	67.5	13 48.2 +32.1	67.7	14 10.8 +33.0	68.0	14 33.2 +33.8	68.2	14 53.2 +34.6	68.4	15 07.0 +35.3	68.6	15 27.0 +36.1	68.6	15 46.8 +37.3	68.6	26		
27	12 19.8 +27.6	65.8	12 44.3 +28.5	66.0	13 08.6 +29.4	66.2	13 32.7 +30.3	66.4	13 56.7 +31.1	66.6	14 20.3 +32.0	66.9	14 43.8 +32.8	67.1	15 07.0 +33.6	67.3	15 27.0 +34.4	67.5	15 47.0 +35.2	67.5	15 67.2 +36.0	67.5	15 87.0 +36.8	67.5	27		
28	12 47.4 +27.5	64.9	13 12.8 +28.4	65.1	14 20.2 +28.6	65.3	15 31.2 +29.4	65.5	16 30.1 +30.2	65.7	17 00.2 +29.8	65.9	17 28.9 +30.6	66.1	18 17.5 +31.4	66.3	19 37.4 +32.2	66.5	20 17.5 +33.0	66.7	21 37.2 +33.8	66.7	22 56.0 +34.6	66.9	23		
29	20 03.1 +23.1	48.8	20 42.5 +23.9	49.1	21 21.7 +24.6	49.4	22 00.6 +25.4	49.7	22 39.3 +26.2	50.0	23 17.7 +27.0	50.3	23 55.9 +27.7	50.7	24 33.8 +28.5	51.0	25 11.9 +29.4	51.2	25 31.5 +30.0	51.4	26 36.6 +30.8	51.6	27 46.4 +31.4	51.8	28 55.7 +32.2	52.0	29
30	20 26.2 +22.8	47.8	21 06.4 +23.5	48.1	22 26.0																						

90°, 270° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	0 00.0 + 30.0	90.0	0 00.0 + 30.9	90.0	0 00.0 + 31.8	90.0	0 00.0 + 32.7	90.0	0 00.0 + 33.6	90.0	0 00.0 + 34.4	90.0	0 00.0 + 35.3	90.0	0 00.0 + 36.1	90.0	0 00.0 + 36.1	90.0	0 00.0 + 36.1	90.0	0 00.0 + 36.1	90.0	0 00.0 + 36.1	90.0	0
1	0 30.0 + 30.0	89.1	0 30.9 + 30.9	89.1	0 31.8 + 31.8	89.2	0 32.7 + 32.6	89.2	0 33.6 + 33.5	89.2	0 34.4 + 34.4	89.2	0 35.3 + 35.2	89.2	0 36.1 + 36.1	89.2	0 36.1 + 36.1	89.2	0 36.1 + 36.1	89.2	0 36.1 + 36.1	89.2	0 36.1 + 36.1	89.2	1
2	1 00.0 + 30.0	88.3	1 01.8 + 30.9	88.3	1 03.6 + 31.8	88.3	1 05.3 + 32.7	88.3	1 07.1 + 33.5	88.3	1 08.8 + 34.4	88.4	1 10.5 + 35.3	88.4	1 12.2 + 36.1	88.4	1 12.2 + 36.1	88.4	1 12.2 + 36.1	88.4	1 12.2 + 36.1	88.4	1 12.2 + 36.1	88.4	2
3	1 30.0 + 29.9	87.4	1 32.7 + 30.8	87.4	1 35.4 + 31.7	87.5	1 38.0 + 32.6	87.5	1 40.6 + 33.5	87.5	1 43.2 + 34.4	87.5	1 45.8 + 35.2	87.6	1 48.3 + 36.1	87.6	1 50.9 + 36.8	87.6	1 52.4 + 37.4	87.6	1 54.3 + 38.1	87.6	1 56.8 + 38.8	87.6	3
4	1 59.9 + 30.0	86.5	2 03.5 + 30.9	86.6	2 07.1 + 31.7	86.6	2 10.6 + 32.6	86.6	2 14.1 + 33.5	86.7	2 17.6 + 34.3	86.7	2 21.0 + 35.2	86.8	2 24.4 + 36.0	86.8	2 24.4 + 36.0	86.8	2 24.4 + 36.0	86.8	2 24.4 + 36.0	86.8	2 24.4 + 36.0	86.8	4
5	2 29.9 + 29.8	85.7	2 34.4 + 30.8	85.7	2 38.8 + 31.7	85.8	2 43.2 + 32.6	85.8	2 47.6 + 33.5	85.9	2 51.9 + 34.3	85.9	2 56.2 + 35.1	86.0	3 00.4 + 36.0	86.0	3 00.4 + 36.0	86.0	3 00.4 + 36.0	86.0	3 00.4 + 36.0	86.0	3 00.4 + 36.0	86.0	5
6	2 59.8 + 29.8	84.8	3 05.2 + 30.7	84.9	3 10.5 + 31.7	84.9	3 15.8 + 32.5	85.0	3 21.1 + 33.4	85.0	3 26.2 + 34.3	85.1	3 31.3 + 35.2	85.1	3 36.4 + 36.0	85.2	3 36.4 + 36.0	85.2	3 36.4 + 36.0	85.2	3 36.4 + 36.0	85.2	3 36.4 + 36.0	85.2	6
7	3 29.6 + 29.8	83.9	3 35.9 + 30.7	84.0	3 42.2 + 31.6	84.1	3 48.3 + 32.5	84.1	3 54.5 + 33.3	84.2	4 00.5 + 34.2	84.3	4 06.5 + 35.0	84.3	4 12.4 + 35.9	84.4	4 12.4 + 35.9	84.4	4 12.4 + 35.9	84.4	4 12.4 + 35.9	84.4	4 12.4 + 35.9	84.4	7
8	3 59.4 + 29.8	83.1	4 06.6 + 30.7	83.1	4 13.8 + 31.5	83.2	4 20.8 + 32.5	83.3	4 27.8 + 33.3	83.4	4 34.7 + 34.2	83.4	4 41.5 + 35.0	83.5	4 48.3 + 35.8	83.6	4 48.3 + 35.8	83.6	4 48.3 + 35.8	83.6	4 48.3 + 35.8	83.6	4 48.3 + 35.8	83.6	8
9	4 29.2 + 29.7	82.2	4 37.3 + 30.6	82.3	4 45.3 + 31.5	82.3	5 01.1 + 33.2	82.5	5 08.9 + 34.1	82.6	5 16.5 + 35.0	82.7	5 24.1 + 35.8	82.8	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	9
10	4 58.9 + 29.6	81.3	5 07.9 + 30.5	81.4	5 16.8 + 31.4	81.5	5 25.6 + 32.3	81.6	5 34.3 + 33.2	81.7	5 43.0 + 34.0	81.8	5 51.5 + 34.9	81.9	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	5 59.9 + 35.7	82.0	10
11	5 28.5 + 29.5	80.4	5 38.4 + 30.4	80.5	5 48.2 + 31.3	80.6	6 05.9 + 32.2	80.7	6 07.5 + 33.1	80.8	6 17.0 + 33.9	81.0	6 26.4 + 34.8	81.1	6 35.6 + 35.7	81.2	6 35.6 + 35.7	81.2	6 35.6 + 35.7	81.2	6 35.6 + 35.7	81.2	6 35.6 + 35.7	81.2	11
12	5 58.0 + 29.5	79.6	6 08.8 + 30.4	79.7	6 19.5 + 31.3	79.8	6 30.1 + 32.1	79.9	6 40.6 + 33.0	80.0	6 50.9 + 33.9	80.1	7 01.2 + 34.7	80.2	7 11.3 + 35.5	80.4	7 11.3 + 35.5	80.4	7 11.3 + 35.5	80.4	7 11.3 + 35.5	80.4	7 11.3 + 35.5	80.4	12
13	6 27.5 + 29.4	78.7	6 39.2 + 30.3	78.8	6 50.8 + 31.1	78.9	7 02.2 + 32.1	79.0	7 13.6 + 32.9	79.2	7 24.8 + 33.8	79.3	7 35.9 + 34.6	79.4	7 46.8 + 35.5	79.6	7 46.8 + 35.5	79.6	7 46.8 + 35.5	79.6	7 46.8 + 35.5	79.6	7 46.8 + 35.5	79.6	13
14	6 56.9 + 29.2	77.8	7 09.5 + 30.1	77.9	7 21.9 + 31.1	78.1	7 34.3 + 31.9	78.2	7 46.5 + 32.8	78.3	7 58.6 + 33.6	78.5	8 10.5 + 34.5	78.6	8 22.3 + 35.4	78.7	8 22.3 + 35.4	78.7	8 22.3 + 35.4	78.7	8 22.3 + 35.4	78.7	8 22.3 + 35.4	78.7	14
15	7 26.1 + 29.2	76.9	7 39.6 + 30.1	77.1	7 53.0 + 30.9	77.2	8 06.2 + 31.8	77.3	8 19.3 + 32.7	77.5	8 32.2 + 33.6	77.6	8 45.0 + 34.4	77.8	8 57.7 + 35.2	77.9	8 57.7 + 35.2	77.9	8 57.7 + 35.2	77.9	8 57.7 + 35.2	77.9	8 57.7 + 35.2	77.9	15
16	7 55.3 + 29.1	76.1	8 09.7 + 29.9	76.2	8 23.9 + 30.9	76.3	8 38.0 + 31.8	76.5	8 52.0 + 32.6	76.6	9 05.8 + 33.4	76.8	9 19.4 + 34.3	76.9	9 32.9 + 35.1	77.1	9 32.9 + 35.1	77.1	9 32.9 + 35.1	77.1	9 32.9 + 35.1	77.1	9 32.9 + 35.1	77.1	16
17	8 24.4 + 28.9	75.2	8 39.6 + 29.9	75.3	8 54.8 + 30.7	75.5	9 09.8 + 31.5	75.6	9 24.6 + 32.4	75.8	9 39.2 + 33.4	75.9	9 53.7 + 34.2	76.1	10 08.0 + 35.1	76.3	10 08.0 + 35.1	76.3	10 08.0 + 35.1	76.3	10 08.0 + 35.1	76.3	10 08.0 + 35.1	76.3	17
18	8 53.3 + 28.8	74.3	9 09.5 + 29.7	74.4	9 25.5 + 30.6	74.6	9 41.3 + 31.5	74.8	9 57.0 + 32.4	74.9	10 12.6 + 33.1	75.1	10 27.9 + 34.0	75.3	10 43.1 + 34.8	75.5	10 43.1 + 34.8	75.5	10 43.1 + 34.8	75.5	10 43.1 + 34.8	75.5	10 43.1 + 34.8	75.5	18
19	9 22.1 + 28.7	73.4	9 39.2 + 29.5	73.6	9 56.1 + 30.4	73.7	10 12.8 + 31.3	73.9	10 29.4 + 32.4	74.1	10 45.7 + 33.1	74.2	11 01.9 + 33.9	74.4	11 17.9 + 34.8	74.6	11 17.9 + 34.8	74.6	11 17.9 + 34.8	74.6	11 17.9 + 34.8	74.6	11 17.9 + 34.8	74.6	19
20	9 50.8 + 28.5	72.5	10 08.7 + 29.5	72.7	10 26.5 + 30.3	72.8	10 44.1 + 31.2	73.0	11 01.6 + 32.0	73.2	11 18.8 + 32.9	73.4	11 35.8 + 33.8	73.6	11 52.7 + 34.6	73.8	11 52.7 + 34.6	73.8	11 52.7 + 34.6	73.8	11 52.7 + 34.6	73.8	11 52.7 + 34.6	73.8	20
21	10 19.3 + 28.4	71.6	10 38.2 + 29.3	71.8	10 56.8 + 30.2	72.0	11 15.3 + 31.0	72.2	11 33.6 + 31.9	72.3	11 51.7 + 32.8	72.5	12 09.6 + 33.6	72.7	12 27.3 + 34.4	73.0	12 27.3 + 34.4	73.0	12 27.3 + 34.4	73.0	12 27.3 + 34.4	73.0	12 27.3 + 34.4	73.0	21
22	10 47.7 + 28.3	70.7	11 07.5 + 29.1	70.9	11 27.0 + 30.0	71.1	11 46.3 + 30.9	71.3	12 05.5 + 31.7	71.5	12 24.5 + 32.5	71.7	12 43.2 + 33.4	71.9	13 01.7 + 34.3	72.1	13 01.7 + 34.3	72.1	13 01.7 + 34.3	72.1	13 01.7 + 34.3	72.1	13 01.7 + 34.3	72.1	22
23	11 16.0 + 28.0	69.8	11 36.6 + 28.9	70.0	11 57.0 + 29.8	70.2	12 17.2 + 30.7	70.4	12 37.2 + 31.6	70.6	12 57.0 + 32.5	70.8	13 16.6 + 33.3	71.0	13 36.0 + 34.1	71.2	13 36.0 + 34.1	71.2	13 36.0 + 34.1	71.2	13 36.0 + 34.1	71.2	13 36.0 + 34.1	71.2	23
24	11 44.0 + 27.9	68.9	12 05.5 + 28.8	69.1	12 26.8 + 29.7	69.3	12 47.9 + 30.5	69.5	13 28.0 + 31.4	69.7	14 08.0 + 32.4	69.9	14 24.2 + 33.2	70.1	14 44.1 + 33.7	70.3	14 44.1 + 33.7	70.3	14 44.1 + 33.7	70.3	14 44.1 + 33.7	70.3	14 44.1 + 33.7	70.3	24
25	12 29.9 + 27.8	68.0	12 34.3 + 28.6	68.2	12 56.5 + 29.5	68.4	13 18.4 + 30.4	68.6	13 40.2 + 31.2	68.9	14 01.7 + 32.1	69.1	14 23.0 + 32.9	69.3	14 44.1 + 33.7	69.6	14 44.1 + 33.7	69.6	14 44.1 + 33.7	69.6	14 44.1 + 33.7	69.6	14 44.1 + 33.7	69.6	25
26	12 39.7 + 27.5	67.1	13 02.9 + 28.4	67.3	13 26.0 + 29.2	67.5	13 48.8 + 30.1	67.8	14 11.4 + 31.0	68.0	14 33.8 + 31.4	68.2	14 55.9 + 32.7	68.5	15 17.8 + 33.6	68.7	15 17.8 + 33.6	68.7	15 17.8 + 33.6	68.7	15 17.8 + 33.6	68.7	15 17.8 + 33.6	68.7	26
27	13 07.2 + 27.4	66.2	13 31.3 + 28.3	66.4	13 55.2 + 29.1	66.6	14 18.9 + 30.0	66.9	14 42.4 + 30.8	67.1	15 05.6 + 31.7	67.3	15 28.6 + 32.5	67.6	15 51.4 + 33.3	67.9	15 51.4 + 33.3	67.9	15 51.4 + 33.3	67.9	15 51.4 + 33.3	67.9	15 51.4 + 33.3	67.9	27
28	13 24.7 + 27.3	65.1	20 09.5 + 24.3	65.3	20 26.1 + 25.1	65.6	21 22.4 + 25.9	65.9	21 58.4 + 26.7	66.3	22 34.1 + 27.6	67.3	22 43.6 + 28.3	68.0	23 09.6 + 30.3	69.2	23 09.6 + 30.3	69.2	23 09.6 + 30.3	69.2	23 09.6 + 30.3	69.2	23 09.6 + 30.3	69.2	23
29	13 2																								

LATITUDE *CONTRARY NAME TO DECLINATION **L.H.A. 90°, 270°**

Dec. °	30°			31°			32°			33°			34°			35°			36°			Dec. °			
	Hc °	d ,	Z °																						
0	0 00.0	+30.0	90.0	0 00.0	+30.9	90.0	0 00.0	+31.8	90.0	0 00.0	+32.7	90.0	0 00.0	+33.6	90.0	0 00.0	+34.4	90.0	0 00.0	+35.3	90.0	0 00.0	+36.1	90.0	0
1	0 30.0	+30.0	89.1	0 30.9	+30.9	89.1	0 31.8	+31.8	89.2	0 32.7	+32.6	89.2	0 33.6	+33.5	89.2	0 34.4	+34.4	89.2	0 35.3	+35.2	89.2	0 36.1	+36.1	89.2	1
2	0 00.0	+30.0	88.3	0 1.8	+30.9	88.3	1 03.6	+31.8	88.3	1 05.3	+32.7	88.3	1 07.1	+33.5	88.3	1 08.8	+34.4	88.4	1 10.5	+35.3	88.4	1 12.2	+36.1	88.4	2
3	1 30.0	+29.9	87.4	1 32.7	+30.8	87.4	1 35.4	+31.7	87.5	1 38.0	+32.6	87.5	1 40.6	+33.5	87.5	1 43.2	+34.4	87.5	1 45.8	+35.2	87.6	1 48.3	+36.1	87.6	3
4	1 59.9	+30.0	86.5	2 03.5	+30.9	86.6	2 07.1	+31.7	86.6	2 10.6	+32.6	86.6	2 14.1	+33.5	86.7	2 17.6	+34.3	86.7	2 21.0	+35.2	86.8	2 24.4	+36.0	86.8	4
5	2 29.9	+29.9	85.7	2 34.4	+30.8	85.7	2 38.8	+31.7	85.8	2 42.3	+32.6	85.8	2 47.6	+33.5	85.9	2 51.9	+34.3	85.9	2 56.2	+35.1	86.0	3 00.4	+36.0	86.0	5
6	2 59.8	+29.8	84.8	3 05.2	+30.7	84.9	3 10.5	+31.7	84.9	3 15.8	+32.5	85.0	3 21.1	+33.4	85.0	3 26.2	+34.3	85.1	3 31.3	+35.2	85.1	3 36.4	+36.0	85.2	6
7	3 29.6	+29.8	83.9	3 35.9	+30.7	84.0	3 42.2	+31.6	84.1	3 48.3	+32.5	84.1	3 54.5	+33.3	84.2	4 00.5	+34.2	84.3	4 06.5	+35.0	84.3	4 12.4	+35.9	84.4	7
8	3 59.4	+29.8	83.1	4 06.6	+30.7	83.1	4 13.8	+31.5	83.2	4 20.8	+32.5	83.3	4 27.8	+33.3	83.4	4 34.7	+34.2	83.4	4 41.5	+35.0	83.5	4 48.3	+35.8	83.6	8
9	4 29.2	+29.7	82.2	4 37.3	+30.6	82.3	4 45.3	+31.5	82.3	4 53.3	+32.3	82.4	5 01.1	+33.2	82.5	5 08.9	+34.1	82.6	5 16.5	+35.0	82.7	5 24.1	+35.8	82.8	9
10	4 58.9	+29.6	81.3	5 07.9	+30.5	81.4	5 16.8	+31.4	81.5	5 25.6	+32.3	81.6	5 34.3	+33.2	81.7	5 43.0	+34.0	81.8	5 51.5	+34.9	81.9	5 59.9	+35.7	82.0	10
11	5 28.5	+29.5	80.4	5 38.4	+30.4	80.5	5 48.2	+31.3	80.6	5 57.9	+32.2	80.7	6 07.5	+33.1	80.8	6 17.0	+33.9	81.0	6 26.4	+34.8	81.1	6 35.6	+35.7	81.2	11
12	5 58.0	+29.5	79.6	6 08.8	+30.4	79.7	6 19.5	+31.3	79.8	6 30.1	+32.1	79.9	6 40.6	+33.0	80.0	6 50.9	+33.9	80.1	7 01.2	+34.7	80.2	7 11.3	+35.5	80.4	12
13	6 27.5	+29.4	78.7	6 39.2	+30.3	78.8	6 50.8	+31.1	78.9	7 02.2	+32.1	79.0	7 13.6	+32.9	79.2	7 24.8	+33.8	79.3	7 35.9	+34.6	79.4	7 46.8	+35.5	79.6	13
14	6 56.9	+29.2	77.8	7 09.5	+30.1	77.9	7 21.9	+31.1	78.1	7 34.3	+31.9	78.2	7 46.5	+32.8	78.3	7 58.6	+33.6	78.5	8 10.5	+34.5	78.6	8 22.3	+35.4	78.7	14
15	7 26.1	+29.2	76.9	7 39.6	+30.1	77.1	7 53.0	+30.9	77.2	8 06.2	+31.8	77.3	8 19.3	+32.7	77.5	8 32.2	+33.6	77.6	8 45.0	+34.4	77.8	8 57.7	+35.2	77.9	15
16	7 55.3	+29.1	76.1	8 09.7	+29.9	76.2	8 23.9	+30.9	76.3	8 38.0	+31.8	76.5	8 52.0	+32.6	76.6	9 05.8	+33.4	76.8	9 19.4	+34.3	76.9	9 32.9	+35.1	77.1	16
17	8 24.4	+28.9	75.2	8 39.6	+29.9	75.3	8 54.8	+30.7	75.5	9 09.8	+31.5	75.6	9 24.6	+32.4	75.8	9 39.2	+33.4	75.9	9 53.7	+34.2	76.1	10 08.0	+35.1	76.3	17
18	8 53.3	+28.8	74.3	9 09.5	+29.7	74.4	9 25.5	+30.6	74.6	9 41.3	+31.5	74.8	9 57.0	+32.4	74.9	10 12.6	+33.1	75.1	10 27.9	+34.0	75.3	10 43.1	+34.8	75.5	18
19	9 22.1	+28.7	73.4	9 39.2	+29.5	73.6	9 56.1	+30.4	73.7	10 12.8	+31.3	73.9	10 29.4	+32.2	74.1	10 45.7	+33.1	74.2	11 01.9	+33.9	74.4	11 17.9	+34.8	74.6	19
20	9 50.8	+28.5	72.5	10 08.7	+29.5	72.7	10 26.5	+30.3	72.8	10 44.1	+31.2	73.0	11 01.6	+32.0	73.2	11 18.8	+32.9	73.4	11 35.8	+33.8	73.6	11 52.7	+34.6	73.8	20
21	10 19.3	+28.4	71.6	10 38.2	+29.3	71.8	10 56.8	+30.2	72.0	11 15.3	+31.0	72.2	11 33.6	+31.9	72.3	11 51.7	+32.8	72.5	12 09.6	+33.6	72.7	12 27.3	+34.4	73.0	21
22	10 47.7	+28.3	70.7	11 07.5	+29.1	70.9	11 27.0	+30.0	71.1	11 46.3	+30.9	71.3	12 05.5	+31.7	71.5	12 24.5	+32.5	71.7	12 43.2	+33.4	71.9	13 01.7	+34.3	72.1	22
23	11 16.0	+28.0	69.8	11 36.6	+28.9	70.0	11 57.0	+29.8	70.2	12 17.2	+30.7	70.4	12 37.2	+31.6	70.6	12 57.0	+32.5	70.8	13 16.6	+33.3	71.0	13 36.0	+34.1	71.3	23
24	11 44.0	+27.9	68.9	12 05.5	+28.8	69.1	12 26.8	+29.7	69.3	12 47.9	+30.5	69.5	13 08.8	+31.4	69.7	13 29.5	+32.0	70.0	13 49.9	+33.1	70.2	14 10.1	+34.0	70.4	24
25	12 11.9	+27.8	68.0	12 34.3	+28.6	68.2	12 56.5	+29.5	68.4	13 18.4	+30.4	68.6	13 40.2	+31.2	68.9	14 01.7	+32.1	69.1	14 23.0	+32.9	69.3	14 44.1	+33.7	69.6	25
26	12 39.7	+27.5	67.1	13 02.9	+28.4	67.3	13 26.0	+29.2	67.5	13 48.8	+30.1	67.8	14 11.4	+31.0	68.0	14 33.8	+31.8	68.2	14 55.9	+32.7	68.5	15 17.8	+33.6	68.7	26
27	13 07.2	+27.4	66.2	13 31.3	+28.3	66.4	13 55.2	+29.1	66.6	14 18.9	+30.0	66.9	14 42.4	+30.8	67.1	15 05.6	+31.7	67.3	15 28.6	+32.5	67.6	15 51.4	+33.3	67.9	27
28	13 34.6	+27.1	65.3	13 59.6	+28.0	65.5	14 24.3	+28.9	65.7	14 48.9	+29.7	66.0	15 13.2	+30.6	66.2	15 37.3	+31.4	66.5	16 01.1	+32.3	66.7	16 24.7	+33.1	67.0	28
29	14 01.7	+27.0	64.4	14 27.6	+27.8	64.6	14 53.2	+28.7	64.8	15 18.6	+29.5	65.1	15 43.8	+30.4	65.3	16 08.7	+31.2	65.6	16 33.4	+32.1	65.8	16 57.8	+32.9	66.1	29
30	14 28.7	+26.7	63.4	14 55.4	+27.6	63.7	15 21.9	+28.4	63.9	15 48.1	+29.3	64.2	16 14.2	+30.1	64.4	16 39.9	+31.0	64.7	17 05.5	+31.8	65.0	17 30.7	+32.7	65.2	30
31	14 55.4	+26.5	62.5	15 23.0	+27.3	62.7	15 50.3	+28.2	63.0	16 17.4	+29.1	63.3	16 44.3	+29.9	63.5	17 10.9	+30.8	63.8	17 37.3	+31.6	64.1	18 03.4	+32.4	64.4	31
32	15 21.9	+26.2	61.6	15 50.3	+27.1	61.8	16 18.5	+28.0	62.1	16 46.5	+28.8	62.3	17 14.2	+29.7	62.6	17 41.7	+30.5	62.9	18 08.9	+31.4	63.2	18 35.8	+32.2	63.5	32
33	15 48.1	+26.1	60.6	16 17.4	+26.9	60.9	16 46.5	+27.7	61.2	17 15.3	+28.6	61.4	17 43.9	+29.4	61.7	18 12.2	+30.3	62.0	18 40.3	+31.0	62.3	19 08.0	+31.9	62.6	33
34	16 14.2	+25.7	59.7	16 44.3	+26.6	60.0	17 14.2	+25.7	60.2	17 43.9	+28.3	60.5	18 13.3	+29.2	60.8	19 42.5	+29.9	61.1	19 11.3	+30.9	61.4	19 39.9	+31.7	61.7	34
35	16 39.9	+25.6	58.8	17 10.9	+26.4	59.0	17 41.7	+27.2	59.3	18 12.2	+28.1	59.6	18 42.5	+28.8	59.9	19 12.4	+29.8	60.2	19 42.2	+30.5	60.5	20 11.6	+31.4	60.8	35
36	17 05.5	+25.2	57.8	17 37.3	+26.1	58.1	18 08.9	+26.9	58.4	18 40.3	+27.7	58.6	19 11.3	+28.6	58.9	19 42.2	+29.4	59.2	20 12.7	+30.3	59.6	20 43.0	+31.1	59.9	36
37	17 30.7	+25.0	56.9	18 03.4	+25.8	57.1	18 35.8	+26.7	57.4	19 08.0	+27.5	57.7	19 39.9	+28.3	58.0	20 11.6	+29.1	58.3	20 43.0	+29.9	58.6	21 14.1	+30.7	59.0	37
38	17 55.7	+24.7	55.9	18 29.2	+25.6	56.2																			